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 NOTE: This session is executing on the SunOS 5.6 platform.

## Exhibit C

This message is contained in the SAS news file, and is presented upon initialization. Edit the files "news" in the "misc/base" directory to display site-specific news and information in the program log. The command line option "-nonews" will prevent this display.

NOTE: SAS initialization used:

real time	0.28 seconds
cpu time	0.06 seconds

```
1 options nonotes noprint validvarname=upcase noovp;
2
3 %let FPPCODE = %sysget(FPPCODE);
4 %let DSBASE=%sysget(DSBASE);
5 %include "%FPPCODE/utilities/macros.macro";
```

\*\*\* ANNOTATE macros are now available \*\*\*

For further information on ANNOTATE macros, enter,  
 %HELPANO(macroname), (for specific macros)  
 %HELPANO(ALL), (for information on all macros)  
 or %HELPANO (for a list of macro names)

```
9654 %include "%FPPCODE/utilities/dbutil.macro";
9818
9819 %include "%FPPCODE/pop/optimizer/getenv.macro";
9864 %include "%FPPCODE/pop/optimizer/target_adjuster.macro";
10191 %include "%FPPCODE/pop/optimizer/discopt.macro";
10836 %include "%FPPCODE/pop/optimizer/pop2_opto.macro";
11237 %include "%FPPCODE/pop/optimizer/mk_pfs.macro";
11542 %include "%FPPCODE/pop/optimizer/ctw2whole_pct.macro";
11636
11637 %include "%FPPCODE/fpp/special_cases.macro";
11785
11786 %getenv(makenew=1, inpf=1);
MPRINT(GETENV);
MPRINT(GETENV); libname product "/appdata/watermdl/fpp/PRODUCTION/200203";
NOTE: Libref PRODUCT was successfully assigned as follows:
      Engine:
            V8
      Physical Name: /appdata/watermdl/fpp/PRODUCTION/200203
MPRINT(GETENV); libname baseds "/appdata/watermdl/feed/ds/200203";
NOTE: Libref BASEDS was successfully assigned as follows:
      Engine:
            V8
      Physical Name: /appdata/watermdl/feed/ds/200203
MPRINT(PFNAM2MAC); data _null_;
MPRINT(PFNAM2MAC); pfname = translate("FPP05003/2/10",' ','/');
MPRINT(PFNAM2MAC); call symput("P", pfname);
MPRINT(PFNAM2MAC); run;
```

NOTE: DATA statement used:

real time	0.00 seconds
cpu time	0.01 seconds

```
pfname=FPPO5003/2/10, p=FPPO5003 2 10
MPRINT(PFNAM2MAC); ;
MPRINT(PFNAM2MAC): proc sql noprint;
MPRINT(PFNAM2MAC): select pfid,pfname ,tl, put(100*w1.z2.) into :pfid, :pfname , :stkck1, :stkwt1 from product.pfmaster where
pfname = "FPPO5003/2/10";
MPRINT(GETENV); ;
MPRINT(GETENV): libname pf "/appdata/watermdl/fpp/PRODUCTION/200203/pf/FPPO5003/2/10";
NOTE: Libref PF was successfully assigned as follows:
```

Engine: V8

Physical Name: /appdata/watermdl/fpp/PRODUCTION/200203/pf/FPPO5003/2/10

NOTE: PROCEDURE SQL used:

real time	0.06 seconds
cpu time	0.02 seconds

```
MPRINT(LIB2MA): proc contents data=pf._all_ mentype=data noprint out=_l2ma;
MPRINT(LIB2MA): run;
```

NOTE: The data set WORK\_L2MA has 93 observations and 40 variables.

NOTE: PROCEDURE CONTENTS used:

real time	0.21 seconds
cpu time	0.04 seconds

```
MPRINT(LIB2MA): data _l2ma;
MPRINT(LIB2MA): set _l2ma(keep=memname);
MPRINT(LIB2MA): by memname;
MPRINT(LIB2MA): if first.memname;
MPRINT(LIB2MA): run;
```

NOTE: There were 93 observations read from the data set WORK\_L2MA.

NOTE: The data set WORK\_L2MA has 14 observations and 1 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.02 seconds

```
MPRINT(DS2MA): proc sql noprint;
MPRINT(DS2MA): select count(distinct memname) into :gds0 from _l2ma where memname ne '' ;
NOTE: PROCEDURE SQL used:
```

real time	0.01 seconds
cpu time	0.01 seconds

```
MPRINT(DS2MA): proc sql noprint;
MPRINT(DS2MA): select distinct memname into :gds1 - :gds14 from _l2ma where memname ne '' order by memname;
MPRINT(LIB2MA); ;
```

NOTE: PROCEDURE SQL used:

real time	0.00 seconds
cpu time	0.01 seconds

```
MPRINT(TRASH): proc datasets nolist lib=work;
```

```
MPRINT(TRASH): delete _l2ma;
MPRINT(TRASH): run;
```

```
NOTE: Deleting WORK_L2MA (memtype=DATA).
MPRINT(LIB2MA): ;
MPRINT(TRASHLIB): ;
```

```
NOTE: PROCEDURE DATASETS used:
      real time      0.03 seconds
      cpu time       0.03 seconds
```

```
MPRINT(TRASH): proc datasets nolist lib=pf;
MPRINT(TRASH): delete AACONST ADJCONST CTW INITDS INQUAD MDL_CTW MDL_DTT MDL_TERR OUTQUAD PLAST SCONST TAROUTQUAD TYCONST;
MPRINT(TRASH): run;
```

```
NOTE: Deleting PF.AACONST (memtype=DATA).
NOTE: Deleting PF.ADJCONST (memtype=DATA).
NOTE: Deleting PF.CTW (memtype=DATA).
NOTE: Deleting PF.INITDS (memtype=DATA).
NOTE: Deleting PF.INQUAD (memtype=DATA).
NOTE: Deleting PF.MDL_CTW (memtype=DATA).
NOTE: Deleting PF.MDL_DTT (memtype=DATA).
NOTE: Deleting PF.MDL_TERR (memtype=DATA).
NOTE: Deleting PF.OUTQUAD (memtype=DATA).
NOTE: Deleting PF.PLAST (memtype=DATA).
NOTE: Deleting PF.SCONST (memtype=DATA).
NOTE: Deleting PF.TAROUTQUAD (memtype=DATA).
NOTE: Deleting PF.TARQUAD (memtype=DATA).
NOTE: Deleting PF.TYCONST (memtype=DATA).
11787
```

```
11788 %opto_pf;
Optimizing Portfolio PF000021 FPP05003/2/CPO/10
```

```
NOTE: PROCEDURE DATASETS used:
      real time      0.11 seconds
      cpu time       0.05 seconds
```

```
MPRINT(DSV2MA): proc contents data=product.opop(drop = ) out=_m1(keep=name varnum ) short noprint;
MPRINT(DSV2MA): run;
```

```
NOTE: The data set WORK_M1 has 5 observations and 2 variables.
```

```
NOTE: PROCEDURE CONTENTS used:
      real time      0.05 seconds
      cpu time       0.03 seconds
```

```
MPRINT(DS2MA): proc sql noprint;
MPRINT(DS2MA): select count(distinct name) into :dm0 from _m1 where name ne '' ;
NOTE: PROCEDURE SQL used:
      real time      0.01 seconds
      cpu time       0.02 seconds
```

```
MPRINT(DS2MA): proc sql noprint;
MPRINT(DS2MA): select distinct name into :dm1 - :dm5 from _m1 where name ne '' order by name;
MPRINT(DSV2MA): ;
```

```

NOTE: PROCEDURE SQL used:
      real time      0.00 seconds
      cpu time       0.01 seconds

MPRINT(TRASH):  proc datasets nolist lib=work;
MPRINT(TRASH):  delete _ml;
MPRINT(TRASH):  run;

NOTE: Deleting WORK._M1 (mentype=DATA).
MPRINT(DS2MACRO): ;
MPRINT(DS2MACRO): ;

NOTE: PROCEDURE DATASETS used:
      real time      0.02 seconds
      cpu time       0.02 seconds

MPRINT(DS2MACRO):  proc sql noprint;
MPRINT(DS2MACRO):  select KAPPA,LAMBDA,LINEAR,MINVAL,WHOLE into :KAPPA, :LAMBDA, :LINEAR, :MINVAL, :WHOLE from product.opop;
MPRINT(OPTO_PF):  ;

NOTE: PROCEDURE SQL used:
      real time      0.01 seconds
      cpu time       0.01 seconds

MPRINT(OPTO_PF):  proc sql;
MPRINT(OPTO_PF):  create table pf.plast as select "PF0000021" as cticker, ticker, frame from product.plast where cticker =
"FP05003" order by ticker;
NOTE: Table PF.PLAST created, with 9 rows and 3 columns.

MPRINT(DBGETPFX): ;
NOTE: PROCEDURE SQL used:
      real time      0.14 seconds
      cpu time       0.10 seconds

MPRINT(DBGETPFX):  proc sql noerrorstopt;
MPRINT(DBGETPFX):  connect to sybase as pod( server=SYBCAUCHY database=pod user=wateradm pass=wateradm );
MPRINT(DBGETPFX):  create table pf.aaconst as select * from connection to pod(
PFNAME='FP05003/2/10' union select 2 as priority, var,target,range from pop2_aaconst where RUNID='fpp/PRODUCTION/200203' and
PFNAME='FP05003/2' union select 3 as priority, var,target,range from pop2_aaconst where RUNID='fpp/PRODUCTION/DEFAULT' and
PFNAME='DEFAULT/2' order by var, priority );
NOTE: Table PF.AACONST created, with 6 rows and 4 columns.

NOTE: PROCEDURE SQL used:
      real time      4.78 seconds
      cpu time       0.17 seconds

MPRINT(GETAACON):  data pf.aaconst(drop=irange);
MPRINT(GETAACON):  set pf.aaconst(rename=(range=irange));
MPRINT(GETAACON):  retain range;
MPRINT(GETAACON):  by var priority;
MPRINT(GETAACON):  if first.var then range = irange;
MPRINT(GETAACON):  minwgt = target - range;
MPRINT(GETAACON):  if minwgt < 0 then minwgt = 0;

```

```

MPRINT(GETAACON): maxwgt = target + range;
MPRINT(GETAACON): if maxwgt > 1 then maxwgt = 1;
MPRINT(GETAACON): if last.var then output;
MPRINT(GETAACON): run;

```

NOTE: There were 6 observations read from the data set PF.AACONST.  
 NOTE: The data set PF.AACONST has 6 observations and 6 variables.

```

NOTE: DATA statement used:
      real time      0.03 seconds
      cpu time       0.01 seconds

```

```

MPRINT(OPTO_PF): ;
MPRINT(DS2MA):   proc sql noprint;
MPRINT(DS2MA):   select count(distinct ticker) into :_mz0 from pf.plast where ticker ne '' ;
NOTE: PROCEDURE SQL used:
      real time      0.02 seconds
      cpu time       0.00 seconds

```

```

MPRINT(DS2MA):   proc sql noprint;
MPRINT(DS2MA):   select distinct ticker into :_mz1 - :_mz9 from pf.plast where ticker ne '' order by ticker;
MPRINT(DS2L):   ;
MPRINT(MK_BENDTT): ;
NOTE: PROCEDURE SQL used:
      real time      0.01 seconds
      cpu time       0.01 seconds

```

```

MPRINT(MK_BENDTT): proc transpose data=pf.aaconst(keep=var target) out=fpp_targ(drop=_name_);
MPRINT(MK_BENDTT): id var;
MPRINT(MK_BENDTT): var target;
MPRINT(MK_BENDTT): run;
NOTE: There were 6 observations read from the data set PF.AACONST.
NOTE: The data set WORK.FPP_TARG has 1 observations and 7 variables.
NOTE: PROCEDURE TRANSPOSE used:
      real time      0.02 seconds
      cpu time       0.02 seconds

```

```

MPRINT(MK_BENDTT): data fpp_targ(rename=(stocks=stocks_ fstocks=fstocks_ bonds=bonds_ cash=cash_ hybonds=hybonds_));
MPRINT(MK_BENDTT): format stocks fstocks bonds hybonds cash 8.4;
MPRINT(MK_BENDTT): set fpp_targ end=eof;
MPRINT(MK_BENDTT): if eof then do;
MPRINT(MK_BENDTT): call symput("TAR_FSTOCKS",compress(put(fstocks,best.)));
MPRINT(MK_BENDTT): call symput("TAR_DSTOCKS",compress(put(stocks,fstocks,best.)));
MPRINT(MK_BENDTT): call symput("TAR_STOCKS",compress(put(stocks,best.)));
MPRINT(MK_BENDTT): end;
MPRINT(MK_BENDTT): run;

```

NOTE: There were 1 observations read from the data set WORK.FPP\_TARG.  
 NOTE: The data set WORK.FPP\_TARG has 1 observations and 7 variables.

```

NOTE: DATA statement used:
      real time      0.02 seconds
      cpu time       0.01 seconds

```

```

MPRINT(MK_BENDTT) : data pf.mdl_dtt(keep=date _bench _eqbench cpo fbndx fcntx fgrix flpsx fmagx fosex _gic_);
MPRINT(MK_BENDTT) : merge fpp_targ product dtt;
MPRINT(MK_BENDTT) : retain tstocks_ tfstocks_ tbonds_ thybonds_ tcash_;
MPRINT(MK_BENDTT) : array _ac(*) stocks_ fstocks_ bonds_ hybonds_ cash_;
MPRINT(MK_BENDTT) : array _tac(*) tstocks_ tfstocks_ tbonds_ thybonds_ tcash_;
MPRINT(MK_BENDTT) : if _n_ eq 1 then do;
MPRINT(MK_BENDTT) :   do i = 1 to 5;
MPRINT(MK_BENDTT) :     if _ac[i] eq . then _ac[i] = 0;
MPRINT(MK_BENDTT) :     _tac[i] = _ac[i];
MPRINT(MK_BENDTT) :   end;
MPRINT(MK_BENDTT) :   _bench = (tstocks_ - tfstocks_) * w5000 + tfstocks_ * _eafe + (tbonds_ - thybonds_) * _bond + thybonds_ * _ml_hym +
MPRINT(MK_BENDTT) :   tcash_ * _cash_;
MPRINT(MK_BENDTT) :   if tstocks_ > 0 then _eqbench = ((tstocks_ - tfstocks_) * w5000 + tfstocks_ * _eafe) / tstocks_;
MPRINT(MK_BENDTT) :   else _eqbench = .;
MPRINT(MK_BENDTT) : run;

```

NOTE: There were 1 observations read from the data set WORK.PPP\_TARG.

NOTE: There were 36 observations read from the data set PRODUCT.DTT.

NOTE: The data set PF.MDL\_DTT has 36 observations and 12 variables.

NOTE: DATA statement used:

real time	0.37 seconds
cpu time	0.32 seconds

```

MPRINT(OPTO_PF) : ;
MPRINT(OPTO_PF) : ;
MPRINT(DBGGETPF) : ;
MPRINT(DBGGETPF) : proc sql noerrorstop;
MPRINT(DBGGETPF) :   connect to sybase as pod( server=SYBCAUCHY database=pod user=wateradm pass=wateradm );
MPRINT(DBGGETPF) :   create table initds as select * from connection to pod(
MPRINT(GETOPINI) : select ticker, wgt from pop2_ini where RUNID='fpp/PRODUCTION/200203' and PNAME = 'FPP05003/2/10' order by
MPRINT(GETOPINI) :   ticker );

```

NOTE: Table WORK.INITDS created, with 0 rows and 2 columns.

NOTE: PROCEDURE SQL used:

real time	0.57 seconds
cpu time	0.10 seconds

```

MPRINT(GETOPINI) : data pf.initds;
MPRINT(GETOPINI) : merge pf.plast initds;
MPRINT(GETOPINI) : by ticker;
MPRINT(GETOPINI) : if wgt eq . then wgt = 0;
MPRINT(GETOPINI) : run;

```

NOTE: There were 9 observations read from the data set PF.PLAST.

NOTE: There were 0 observations read from the data set WORK.INITDS.

NOTE: The data set PF.INITDS has 9 observations and 4 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.01 seconds

```

MPRINT(OPTO_PF) : ;
MPRINT(DBGGETPF) : ;
MPRINT(DBGGETPF) : proc sql noerrorstop;
MPRINT(DBGGETPF) :   connect to sybase as pod( server=SYBCAUCHY database=pod user=wateradm pass=wateradm );

```

```

MPRINT(DBGETPFX): create table _const as select * from connection to pod(
MPRINT(GETTYCON): select 1 as priority, typevar, typeval, minwgt, maxwgt from pop2_tyconst where RUNID='fpp/PRODUCTION/200203' and
PFNAME='FPP05003/2/10' union select 2 as priority, typevar, typeval, minwgt, maxwgt from pop2_tyconst where
RUNID='fpp/PRODUCTION/200203' and PFNAME='FPP05003/2' union select 3 as priority, typevar, typeval, minwgt, maxwgt from pop2_tyconst
where RUNID='fpp/PRODUCTION/200203' and PFNAME='' order by typevar, typeval, priority );
NOTE: Table WORK._CONST created, with 0 rows and 5 columns.

```

```

NOTE: PROCEDURE SQL used:
      real time      0.12 seconds
      cpu time       0.09 seconds

```

```

MPRINT(GETTYCON): data _const;
MPRINT(GETTYCON): set _const;
MPRINT(GETTYCON): by typevar typeval priority;
MPRINT(GETTYCON): if first.priority;
MPRINT(GETTYCON): run;

```

```

NOTE: There were 0 observations read from the data set WORK._CONST.
NOTE: The data set WORK._CONST has 0 observations and 5 variables.

```

```

NOTE: DATA statement used:
      real time      0.01 seconds
      cpu time       0.01 seconds

```

```

MPRINT(DS2MA): proc sql noprint;
MPRINT(DS2MA): select count(*) into :_tvr0 from _const ;
MPRINT(GETTYCON): ;
NOTE: PROCEDURE SQL used:
      real time      0.00 seconds
      cpu time       0.01 seconds

```

```

MPRINT(DS2MA): proc sql noprint;
MPRINT(DS2MA): select count(*) into :_tv10 from _const ;
MPRINT(GETTYCON): ;
NOTE: PROCEDURE SQL used:
      real time      0.00 seconds
      cpu time       0.00 seconds

```

```

MPRINT(DS2MA): proc sql noprint;
MPRINT(DS2MA): select count(*) into :_tmn0 from _const ;
MPRINT(GETTYCON): ;
NOTE: PROCEDURE SQL used:
      real time      0.00 seconds
      cpu time       0.01 seconds

```

```

MPRINT(DS2MA): proc sql noprint;
MPRINT(DS2MA): select count(*) into :_tmx0 from _const ;
MPRINT(GETTYCON): ;
NOTE: PROCEDURE SQL used:
      real time      0.00 seconds
      cpu time       0.01 seconds

```

```

MPRINT(GETTYCON): proc sql noprint;

```

```

MPRINT(GETTYCON): create table pf.tyconst(ticker char(8), minwgt num, maxwgt num);
NOTE: Table PF.TYCONST created, with 0 rows and 3 columns.
NOTE: PROCEDURE SQL used:
      real time      0.02 seconds
      cpu time       0.00 seconds

```

```

MPRINT(GETTYCON): proc sort data=pf.tyconst;
MPRINT(GETTYCON): by ticker;
MPRINT(GETTYCON): run;

```

```

NOTE: Input data set is empty.
NOTE: The data set PF.TYCONST has 0 observations and 3 variables.
NOTE: PROCEDURE SORT used:
      real time      0.02 seconds
      cpu time       0.02 seconds

```

```

MPRINT(TY_SPECIAL_CASES): data gicon;
MPRINT(TY_SPECIAL_CASES): length ticker $8.;
MPRINT(TY_SPECIAL_CASES): ticker = '_GIC_';
MPRINT(TY_SPECIAL_CASES): minwgt = 0;
MPRINT(TY_SPECIAL_CASES): maxwgt = 1;
MPRINT(TY_SPECIAL_CASES): output;
MPRINT(TY_SPECIAL_CASES): ticker = '_0632';
MPRINT(TY_SPECIAL_CASES): output;
MPRINT(TY_SPECIAL_CASES): ticker = '_0633';
MPRINT(TY_SPECIAL_CASES): output;
MPRINT(TY_SPECIAL_CASES): run;

```

```

NOTE: The data set WORK.GICON has 3 observations and 3 variables.
NOTE: DATA statement used:
      real time      0.04 seconds
      cpu time       0.01 seconds

```

```

MPRINT(TY_SPECIAL_CASES): proc append base=pf.tyconst data=gicon;
NOTE: Appending WORK.GICON to PF.TYCONST.
NOTE: There were 3 observations read from the data set WORK.GICON.
NOTE: 3 observations added.
NOTE: The data set PF.TYCONST has 3 observations and 3 variables.
NOTE: PROCEDURE APPEND used:
      real time      0.02 seconds
      cpu time       0.01 seconds

```

```

MPRINT(TY_SPECIAL_CASES): proc sort data=pf.tyconst;
MPRINT(TY_SPECIAL_CASES): by ticker;
MPRINT(TY_SPECIAL_CASES): run;

```

```

NOTE: There were 3 observations read from the data set PF.TYCONST.
NOTE: The data set PF.TYCONST has 3 observations and 3 variables.
NOTE: PROCEDURE SORT used:
      real time      0.01 seconds
      cpu time       0.01 seconds

```

```

MPRINT(GETTYCON): ;

```



```

MPRINT(OPTO_PF) ;
MPRINT(GETFACON) ; data faconst;
MPRINT(GETFACON) : format ticker $8. wgt best.;
MPRINT(GETFACON) : if 1 > 0;
MPRINT(GETFACON) : ticker = "CPO ";
MPRINT(GETFACON) : wgt = 10/100;
MPRINT(GETFACON) : minwgt=wgt;
MPRINT(GETFACON) : maxwgt=wgt;
MPRINT(GETFACON) : if ticker ne '' then output;
MPRINT(GETFACON) : run;

```

NOTE: The data set WORK.FACONST has 1 observations and 4 variables.

NOTE: DATA statement used:

```

real time      0.01 seconds
cpu time       0.00 seconds

```

```

MPRINT(OPTO_PF) ;
MPRINT(OPTO_PF) : data pf.sconst;
MPRINT(OPTO_PF) : merge pf.tyconst faconst;
MPRINT(OPTO_PF) : by ticker;
MPRINT(OPTO_PF) : if wgt ne . then do;
MPRINT(OPTO_PF) : maxwgt=wgt;
MPRINT(OPTO_PF) : minwgt=wgt;
MPRINT(OPTO_PF) : end;
MPRINT(OPTO_PF) : run;

```

NOTE: There were 3 observations read from the data set PF.TYCONST.

NOTE: There were 1 observations read from the data set WORK.FACONST.

NOTE: The data set PF.SCONST has 4 observations and 4 variables.

NOTE: DATA statement used:

```

real time      0.01 seconds
cpu time       0.01 seconds

```

```

MPRINT(CLEANRET) : data _trl;
MPRINT(CLEANRET) : set pf.mdl_dtt;
MPRINT(CLEANRET) : array __x _numeric_;
MPRINT(CLEANRET) : do over __x;
MPRINT(CLEANRET) : if __x = . then __x = 0;
MPRINT(CLEANRET) : end;
MPRINT(CLEANRET) : output;
MPRINT(CLEANRET) : run;

```

NOTE: There were 36 observations read from the data set PF.MDL\_DTT.

NOTE: The data set WORK.\_TRL has 36 observations and 12 variables.

NOTE: DATA statement used:

```

real time      0.01 seconds
cpu time       0.01 seconds

```

```

MPRINT(TRASH) : proc datasets nolist lib=work;
MPRINT(TRASH) : delete _rc3;
MPRINT(TRASH) : run;

```

NOTE: The file WORK.\_RC3 (memtype=DATA) was not found, but appears on a DELETE statement.

```

MPRINT(CLEANRET) ;
MPRINT(TOTALRET) ;

```

NOTE: PROCEDURE DATASETS used:

real time	0.02 seconds
cpu time	0.00 seconds

```
MPRINT(DSV2FL): proc contents data=_tr1(drop = DATE) out=_m1(keep=name varnum) short noprint;
MPRINT(DSV2FL): run;
```

NOTE: The data set WORK\_M1 has 11 observations and 2 variables.

NOTE: PROCEDURE CONTENTS used:

real time	0.02 seconds
cpu time	0.00 seconds

```
MPRINT(DSV2FL): proc sort data=_m1;
MPRINT(DSV2FL): by varnum;
MPRINT(DSV2FL): run;
```

NOTE: There were 11 observations read from the data set WORK\_M1.

NOTE: The data set WORK\_M1 has 11 observations and 2 variables.

NOTE: PROCEDURE SORT used:

real time	0.01 seconds
cpu time	0.00 seconds

```
MPRINT(DSV2FL): data _null_;
MPRINT(DSV2FL): set _m1 end=eof;
MPRINT(DSV2FL): if _n_ = 1 then call symput("_f",name);
MPRINT(DSV2FL): if eof then do;
MPRINT(DSV2FL): call symput("_l",name);
MPRINT(DSV2FL): call symput("_c",trim(left(put(_n,8)))));
MPRINT(DSV2FL): end;
MPRINT(DSV2FL): run;
```

NOTE: There were 11 observations read from the data set WORK\_M1.

NOTE: DATA statement used:

real time	0.00 seconds
cpu time	0.01 seconds

```
MPRINT(TRASH): proc datasets nolist lib=work;
MPRINT(TRASH): delete _m1;
MPRINT(TRASH): run;
```

NOTE: Deleting WORK\_M1 (memtype=DATA).

```
MPRINT(DSV2FL): ;
```

```
MPRINT(TOTALRET): ;
```

NOTE: PROCEDURE DATASETS used:

real time	0.02 seconds
cpu time	0.00 seconds

```
MPRINT(TOTALRET): data _ret(drop = _x1 - _x11 _i);
MPRINT(TOTALRET): set _tr1 end=eof;
MPRINT(TOTALRET): array _t{11} CPO -- _EQBENCH ;
MPRINT(TOTALRET): array _x{11};
MPRINT(TOTALRET): retain _x1 - _x11 1;
```

```

MPRINT(TOTALRET): do _i = 1 to 11;
MPRINT(TOTALRET):   _x[_i] = _x[_i] * (1+ _t[_i]);
MPRINT(TOTALRET): end;
MPRINT(TOTALRET): if eof then do;
MPRINT(TOTALRET): do _i = 1 to 11;
MPRINT(TOTALRET):   _t[_i] = _x[_i] - 1;
MPRINT(TOTALRET): end;
MPRINT(TOTALRET): output;
MPRINT(TOTALRET): end;
MPRINT(TOTALRET): run;

```

NOTE: There were 36 observations read from the data set WORK.\_TR1.

NOTE: The data set WORK.\_RET has 1 observations and 12 variables.

NOTE: DATA statement used:

```

real time      0.02 seconds
cpu time       0.02 seconds

```

```

MPRINT(TRASH): proc datasets nolist lib=work;
MPRINT(TRASH): delete _tr1 _tr2;
MPRINT(TRASH): run;

```

NOTE: The file WORK.\_TR2 (memtype=DATA) was not found, but appears on a DELETE statement.

NOTE: Deleting WORK.\_TR1 (memtype=DATA).

```
MPRINT(TOTALRET): ;
```

```
MPRINT(RET2TV): ;
```

NOTE: PROCEDURE DATASETS used:

```

real time      0.02 seconds
cpu time       0.00 seconds

```

```
MPRINT(RET2TV): proc transpose data= _ret (drop=date) out=_a4(rename=(coll=return)) name=ticker;
```

NOTE: There were 1 observations read from the data set WORK.\_RET.

NOTE: The data set WORK.\_A4 has 11 observations and 2 variables.

NOTE: PROCEDURE TRANSPOSE used:

```

real time      0.02 seconds
cpu time       0.02 seconds

```

```
MPRINT(RET2TV): proc sort data=_a4;
```

```
MPRINT(RET2TV): by ticker;
```

NOTE: There were 11 observations read from the data set WORK.\_A4.

NOTE: The data set WORK.\_A4 has 11 observations and 2 variables.

NOTE: PROCEDURE SORT used:

```

real time      0.01 seconds
cpu time       0.02 seconds

```

```
MPRINT(RET2TV): data pf.plast;
```

```
MPRINT(RET2TV): merge pf.plast(in=int) _a4(keep=ticker return);
```

```
MPRINT(RET2TV): by ticker;
```

```
MPRINT(RET2TV): if int;
```

```
MPRINT(RET2TV): run;
```

NOTE: There were 9 observations read from the data set PF.PLAST.

NOTE: There were 11 observations read from the data set WORK\_A4.  
 NOTE: The data set PF.PLAST has 9 observations and 4 variables.  
 NOTE: DATA statement used:  
     real time        0.02 seconds  
     cpu time          0.02 seconds

```
MPRINT(TRASH):  proc datasets nolist lib=work;
MPRINT(TRASH):  delete _a4;
MPRINT(TRASH):  run;
```

```
NOTE: Deleting WORK_A4 (memtype=DATA).
MPRINT(RET2TV): ;
MPRINT(OPTO_PF): ;
```

NOTE: PROCEDURE DATASETS used:  
     real time        0.02 seconds  
     cpu time          0.01 seconds

```
MPRINT(TARADJ): data pf.adjconst;
MPRINT(TARADJ): set pf.aconst;
MPRINT(TARADJ): minwgt=target-range;
MPRINT(TARADJ): maxwgt=target+range;
MPRINT(TARADJ): run;
```

NOTE: There were 6 observations read from the data set PF.AACONST.  
 NOTE: The data set PF.ADJCONST has 6 observations and 6 variables.  
 NOTE: DATA statement used:  
     real time        0.01 seconds  
     cpu time          0.01 seconds

```
MPRINT(TARADJ): proc sql noprint;
MPRINT(TARADJ): select i-sum(wgt) into :newmaxwt from faconst;
NOTE: PROCEDURE SQL used:  

      real time        0.00 seconds  

      cpu time          0.00 seconds
```

```
MPRINT(TARADJ): proc transpose data=pf.aconst(keep=var target) out=targetts(drop=_label_);
MPRINT(TARADJ): var target;
MPRINT(TARADJ): id var;
MPRINT(TARADJ): run;
```

NOTE: There were 6 observations read from the data set PF.AACONST.  
 NOTE: The data set WORK.TARGETS has 1 observations and 7 variables.  
 NOTE: PROCEDURE TRANSPOSE used:  
     real time        0.01 seconds  
     cpu time          0.00 seconds

```
MPRINT(TARADJ): data targets;
MPRINT(TARADJ): format other 8.4;
MPRINT(TARADJ): set targets;
MPRINT(TARADJ): DSTOCKS=STOCKS-FSTOCKS;
MPRINT(TARADJ): IGBONDS=BONDS-HYBONDS;
MPRINT(TARADJ): call symput("_EQTOR",compress(put(stocks*1.05,10.6)));
```

```

MPRINT(TARADJ):  run;

NOTE: There were 1 observations read from the data set WORK.TARGETS.
NOTE: The data set WORK.TARGETS has 1 observations and 9 variables.
NOTE: DATA statement used:
      real time      0.01 seconds
      cpu time       0.01 seconds

MPRINT(TARADJ):  proc transpose data=targets(drop=STOCKS BONDS OTHER) out=targets(rename=_name_=var);
MPRINT(TARADJ):  run;

NOTE: There were 1 observations read from the data set WORK.TARGETS.
NOTE: The data set WORK.TARGETS has 5 observations and 2 variables.
NOTE: PROCEDURE TRANSPOSE used:
      real time      0.01 seconds
      cpu time       0.02 seconds

MPRINT(VAR2TICKER):  proc sort data=targets out=targets;
MPRINT(VAR2TICKER):  by var;
NOTE: There were 5 observations read from the data set WORK.TARGETS.
NOTE: The data set WORK.TARGETS has 5 observations and 2 variables.
NOTE: PROCEDURE SORT used:
      real time      0.01 seconds
      cpu time       0.00 seconds

MPRINT(VAR2TICKER):  data targets;
MPRINT(VAR2TICKER):  length ticker $8;
MPRINT(VAR2TICKER):  merge targets(in=ina) ast_idx(keep=var ticker in=inb);
MPRINT(VAR2TICKER):  by var;
MPRINT(VAR2TICKER):  if ina and inb;
MPRINT(VAR2TICKER):  run;

NOTE: There were 5 observations read from the data set WORK.TARGETS.
NOTE: There were 5 observations read from the data set WORK.AST_IDX.
NOTE: The data set WORK.TARGETS has 5 observations and 3 variables.
NOTE: DATA statement used:
      real time      0.02 seconds
      cpu time       0.01 seconds

MPRINT(TARADJ):  ;
MPRINT(TARADJ):  data aarange;
MPRINT(TARADJ):  set targets(keep=var ticker target) end=eof;
MPRINT(TARADJ):  if ticker eq '_BOND' then minwgt=target*.75;
MPRINT(TARADJ):  else if ticker eq '_CASH_' then minwgt = target/2;
MPRINT(TARADJ):  if ticker eq '_W5000' then maxwgt = target*1.2 + 10/100;
MPRINT(TARADJ):  else if ticker eq "EAFE" then maxwgt = target*1.2;
MPRINT(TARADJ):  else if ticker eq "_ML_HYM" then maxwgt = .1;
MPRINT(TARADJ):  if minwgt eq . then minwgt = 0;
MPRINT(TARADJ):  if maxwgt eq . then maxwgt = 1;
MPRINT(TARADJ):  output;
MPRINT(TARADJ):  if eof then do;
MPRINT(TARADJ):  var='STOCKS';
MPRINT(TARADJ):  ticker = '';
MPRINT(TARADJ):  minwgt = 0;

```

```

MPRINT(TARADJ): maxwgt = 0.892500;
MPRINT(TARADJ): output;
MPRINT(TARADJ): var='BONDS';
MPRINT(TARADJ): ticker = '';
MPRINT(TARADJ): minwgt = 0;
MPRINT(TARADJ): maxwgt = 1;
MPRINT(TARADJ): output;
MPRINT(TARADJ): end;
MPRINT(TARADJ): run;

```

NOTE: There were 5 observations read from the data set WORK.TARGETS.  
 NOTE: The data set WORK.AARANGE has 7 observations and 5 variables.  
 NOTE: DATA statement used:  
     real time          0.02 seconds  
     cpu time          0.01 seconds

```

MPRINT(TARADJ): proc sort data=aarange;
MPRINT(TARADJ): by ticker;
MPRINT(TARADJ): run;

```

NOTE: There were 7 observations read from the data set WORK.AARANGE.  
 NOTE: The data set WORK.AARANGE has 7 observations and 5 variables.  
 NOTE: PROCEDURE SORT used:  
     real time          0.01 seconds  
     cpu time          0.00 seconds

```

MPRINT(TARADJ): data quad_tv(keep=ticker stocks dstocks fstocks igbonds bonds cash hybonds);
MPRINT(TARADJ): merge aarange(in=ina where=(ticker ne '')) faconst(in=inb) product.asset_tv(in=inc keep=ticker stocks dstocks
fstocks bonds igbonds cash hybonds) ast_idx(in=ind);
MPRINT(TARADJ): by ticker;
MPRINT(TARADJ): if inb or ind;
MPRINT(TARADJ): run;

```

NOTE: There were 5 observations read from the data set WORK.AARANGE.  
 WHERE ticker not = '';  
 NOTE: There were 1 observations read from the data set WORK.FACONST.  
 NOTE: There were 968 observations read from the data set PRODUCT.ASSET\_TV.  
 NOTE: There were 5 observations read from the data set WORK.AST\_IDX.  
 NOTE: The data set WORK.QUAD\_TV has 6 observations and 8 variables.  
 NOTE: DATA statement used:  
     real time          0.06 seconds  
     cpu time          0.03 seconds

```

MPRINT(DS2MA): proc sql noprint;
MPRINT(DS2MA): select count(distinct ticker) into :_mz0 from quad_tv where ticker ne '' ;
NOTE: PROCEDURE SQL used:  

      real time          0.02 seconds  

      cpu time          0.00 seconds
```

```

MPRINT(DS2MA): proc sql noprint;
MPRINT(DS2MA): select distinct ticker into :_mz1 - :_mz6 from quad_tv where ticker ne '' order by ticker;
MPRINT(DS2L);
TARADJ: optimizing CPO_BOND_CASH_EAFE_ML_HYM_W5000

```

```

NOTE: PROCEDURE SQL used:
      real time      0.01 seconds
      cpu time       0.01 seconds

MPRINT(TARADJ):      data _tadtt;
MPRINT(TARADJ):      merge product.dtt( keep = date CPO _BOND _CASH_ _EAFE _ML_HYM _W5000) pf.mdl_dtt(keep=date _bench _eqbench );
MPRINT(TARADJ):      by date;
MPRINT(TARADJ):      run;

NOTE: There were 36 observations read from the data set PRODUCT.DTT.
NOTE: There were 36 observations read from the data set PF.MDL.DTT.
NOTE: The data set WORK._TADTT has 36 observations and 9 variables.
NOTE: DATA statement used:
      real time      0.04 seconds
      cpu time       0.03 seconds

MPRINT(TARADJ):      data _cvin(drop=_bench);
MPRINT(TARADJ):      set _tadtt(keep=CPO _BOND _CASH_ _EAFE _ML_HYM _W5000 _bench);
MPRINT(TARADJ):      array _x CPO _BOND _CASH_ _EAFE _ML_HYM _W5000;
MPRINT(TARADJ):      do over _x;
MPRINT(TARADJ):      _x = (_x-_bench)*100;
MPRINT(TARADJ):      end;
MPRINT(TARADJ):      run;

NOTE: There were 36 observations read from the data set WORK._TADTT.
NOTE: The data set WORK._CVIN has 36 observations and 6 variables.
NOTE: DATA statement used:
      real time      0.02 seconds
      cpu time       0.01 seconds

MPRINT(TARADJ):      proc corr cov data=_cvin outp=_cov nosimple noprint;
MPRINT(TARADJ):      var CPO _BOND _CASH_ _EAFE _ML_HYM _W5000;
MPRINT(TARADJ):      run;

NOTE: The data set WORK._COV has 15 observations and 8 variables.
NOTE: PROCEDURE CORR used:
      real time      0.01 seconds
      cpu time       0.02 seconds

MPRINT(DS2MA):      proc sql noprint;
MPRINT(DS2MA):      select count(distinct ticker) into :a10 from quad_tv where ticker ne '' ;
NOTE: PROCEDURE SQL used:
      real time      0.02 seconds
      cpu time       0.01 seconds

MPRINT(DS2MA):      proc sql noprint;
MPRINT(DS2MA):      select distinct ticker into :all - :a16 from quad_tv where ticker ne '' order by ticker;
MPRINT(QUAD):      ;
NOTE: PROCEDURE SQL used:
      real time      0.00 seconds
      cpu time       0.01 seconds

```

```

MPRINT(QUAD): data pf.tarquad(keep = _type_ _name_ _CPO_ _BOND_ _CASH_ _EAFE_ _ML_HYM_ _W5000_ _rhs_);
MPRINT(QUAD): format _type_ $8. _name_ $8. _vname $8.;
MPRINT(QUAD): set cov(where=(_type_ = 'COV' and _name_ in ('CPO', '_BOND', '_CASH_', '_EAFE', '_ML_HYM', '_W5000*')) ) end = eof;
MPRINT(QUAD): retain _rhs_ . _vname '';
MPRINT(QUAD): _type_ = 'QUAD';
MPRINT(QUAD): CPO = CPO * 2 * 1;
MPRINT(QUAD): _BOND = _BOND * 2 * 1;
MPRINT(QUAD): _CASH_ = _CASH_ * 2 * 1;
MPRINT(QUAD): _EAFE = _EAFE * 2 * 1;
MPRINT(QUAD): _ML_HYM = _ML_HYM * 2 * 1;
MPRINT(QUAD): _W5000 = _W5000 * 2 * 1;
MPRINT(QUAD): output;
MPRINT(QUAD): if eof then do;
MPRINT(QUAD): CPO = 1;
MPRINT(QUAD): _BOND = 1;
MPRINT(QUAD): _CASH_ = 1;
MPRINT(QUAD): _EAFE = 1;
MPRINT(QUAD): _ML_HYM = 1;
MPRINT(QUAD): _W5000 = 1;
MPRINT(QUAD): _type_ = 'eq';
MPRINT(QUAD): _name_ = 'WGT';
MPRINT(QUAD): _rhs_ = 1;
MPRINT(QUAD): output;
MPRINT(QUAD): end;
MPRINT(QUAD): run;

```

NOTE: There were 6 observations read from the data set WORK.\_COV\_.

NOTE: WHERE (\_type\_='COV') and \_name\_ in ('CPO', '\_BOND', '\_CASH\_', '\_EAFE', '\_ML\_HYM', '\_W5000\*');

NOTE: The data set PF.TARQUAD has 7 observations and 9 variables.

NOTE: DATA statement used:

real time	0.04 seconds
cpu time	0.03 seconds

```

MPRINT(S2QCONST): proc sort data=faconst(keep = ticker maxwgt) out=_q3;
MPRINT(S2QCONST): by ticker maxwgt;

```

NOTE: There were 1 observations read from the data set WORK.FACONST.

NOTE: The data set WORK.\_Q3 has 1 observations and 2 variables.

NOTE: PROCEDURE SORT used:

real time	0.03 seconds
cpu time	0.01 seconds

```

MPRINT(S2QCONST): data _q3;

```

```

MPRINT(S2QCONST): set _q3;

```

```

MPRINT(S2QCONST): by ticker maxwgt;

```

```

MPRINT(S2QCONST): if first.ticker;

```

NOTE: There were 1 observations read from the data set WORK.\_Q3.

NOTE: The data set WORK.\_Q3 has 1 observations and 2 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.02 seconds

```

MPRINT(S2QCONST): proc transpose data=_q3 out=_q4;

```

```

MPRINT(S2QCONST): var maxwgt;

```



```

MPRINT(S2QCONST): id ticker;
NOTE: There were 1 observations read from the data set WORK._Q3.
NOTE: The data set WORK._Q4 has 1 observations and 2 variables.
NOTE: PROCEDURE TRANSPOSE used:
      real time      0.01 seconds
      cpu time       0.01 seconds

```

```

MPRINT(S2QCONST): data _q4;
MPRINT(S2QCONST): format _type_ $8. _name_ $8.;
MPRINT(S2QCONST): set _q4;
MPRINT(S2QCONST): _type_ = 'upperbd ';
MPRINT(S2QCONST): _name_ = 'UPPER';
MPRINT(S2QCONST): _RHS_ = .;
MPRINT(S2QCONST): if CPO eq . then CPO = 1;
MPRINT(S2QCONST): if _BOND eq . then _BOND = 1;
MPRINT(S2QCONST): if _CASH eq . then _CASH = 1;
MPRINT(S2QCONST): if _EAFE eq . then _EAFE = 1;
MPRINT(S2QCONST): if _ML_HYM eq . then _ML_HYM = 1;
MPRINT(S2QCONST): if _W5000 eq . then _W5000 = 1;
MPRINT(S2QCONST): run;

```

```

NOTE: There were 1 observations read from the data set WORK._Q4.
NOTE: The data set WORK._Q4 has 1 observations and 9 variables.
NOTE: DATA statement used:
      real time      0.02 seconds
      cpu time       0.02 seconds

```

```

MPRINT(S2QCONST): proc sort data=faconst(keep = ticker minwgt) out=_q5;
MPRINT(S2QCONST): by ticker descending minwgt;

```

```

NOTE: There were 1 observations read from the data set WORK.FACONST.
NOTE: The data set WORK._Q5 has 1 observations and 2 variables.
NOTE: PROCEDURE SORT used:
      real time      0.02 seconds
      cpu time       0.00 seconds

```

```

MPRINT(S2QCONST): data _q5;
MPRINT(S2QCONST): set _q5;
MPRINT(S2QCONST): by ticker descending minwgt;
MPRINT(S2QCONST): if first.ticker;

```

```

NOTE: There were 1 observations read from the data set WORK._Q5.
NOTE: The data set WORK._Q5 has 1 observations and 2 variables.
NOTE: DATA statement used:
      real time      0.01 seconds
      cpu time       0.02 seconds

```

```

MPRINT(S2QCONST): proc transpose data=_q5 out=_q6;
MPRINT(S2QCONST): var minwgt;
MPRINT(S2QCONST): id ticker;
NOTE: There were 1 observations read from the data set WORK._Q5.
NOTE: The data set WORK._Q6 has 1 observations and 2 variables.
NOTE: PROCEDURE TRANSPOSE used:
      real time      0.01 seconds

```

cpu time 0.00 seconds

```

MPRINT(S2QCONST): data _q6;
MPRINT(S2QCONST): format _type_ $8. _name_ $8.;
MPRINT(S2QCONST): set _q6;
MPRINT(S2QCONST): _type_ = 'lowerbd';
MPRINT(S2QCONST): _name_ = 'LOWER';
MPRINT(S2QCONST): _RHS_ = .;
MPRINT(S2QCONST): if CPO eq . then CPO = 0;
MPRINT(S2QCONST): if _BOND eq . then _BOND = 0;
MPRINT(S2QCONST): if _CASH eq . then _CASH = 0;
MPRINT(S2QCONST): if _EAFE eq . then _EAFE = 0;
MPRINT(S2QCONST): if _ML_HYM eq . then _ML_HYM = 0;
MPRINT(S2QCONST): if _W5000 eq . then _W5000 = 0;
MPRINT(S2QCONST): run;

```

NOTE: There were 1 observations read from the data set WORK.\_Q6.  
 NOTE: The data set WORK.\_Q6 has 1 observations and 9 variables.  
 NOTE: DATA statement used:  
     real time 0.02 seconds  
     cpu time 0.01 seconds

```

MPRINT(S2QCONST): data tsconst(keep = _type_ _name_ _rhs_ CPO _BOND _CASH_ _EAFE _ML_HYM _W5000);
MPRINT(S2QCONST): set _q4 _q6;
MPRINT(S2QCONST): run;

```

NOTE: There were 1 observations read from the data set WORK.\_Q4.  
 NOTE: There were 1 observations read from the data set WORK.\_Q6.  
 NOTE: The data set WORK.TSCONST has 2 observations and 9 variables.  
 NOTE: DATA statement used:  
     real time 0.02 seconds  
     cpu time 0.02 seconds

```

MPRINT(TRASH): proc datasets nolist lib=work;
MPRINT(TRASH): delete _q3 _q4 _q5 _q6;
MPRINT(TRASH): run;

```

NOTE: Deleting WORK.\_Q3 (memtype=DATA).  
 NOTE: Deleting WORK.\_Q4 (memtype=DATA).  
 NOTE: Deleting WORK.\_Q5 (memtype=DATA).  
 NOTE: Deleting WORK.\_Q6 (memtype=DATA).  
 MPRINT(S2QCONST): ;  
 MPRINT(QUAD): ;  
 NOTE: PROCEDURE DATASETS used:  
     real time 0.04 seconds  
     cpu time 0.00 seconds

```

MPRINT(QUAD): proc append base=pf.tarquad data=tsconst force;
MPRINT(QUAD): run;

```

NOTE: Appending WORK.TSCONST to PF.TARQUAD.  
 NOTE: There were 2 observations read from the data set WORK.TSCONST.  
 NOTE: 2 observations added.  
 NOTE: The data set PF.TARQUAD has 9 observations and 9 variables.

NOTE: PROCEDURE APPEND used:  
 real time 0.01 seconds  
 cpu time 0.01 seconds

```

MPRINT(QUAD): data _q1;
MPRINT(QUAD): format ticker $8.;
MPRINT(QUAD): ticker = "CPO";
MPRINT(QUAD): wgt = 1 / 6;
MPRINT(QUAD): output;
MPRINT(QUAD): ticker = "_BOND";
MPRINT(QUAD): wgt = 1 / 6;
MPRINT(QUAD): output;
MPRINT(QUAD): ticker = "_CASH_";
MPRINT(QUAD): wgt = 1 / 6;
MPRINT(QUAD): output;
MPRINT(QUAD): ticker = "_EAFE";
MPRINT(QUAD): wgt = 1 / 6;
MPRINT(QUAD): output;
MPRINT(QUAD): ticker = "_ML_HYM";
MPRINT(QUAD): wgt = 1 / 6;
MPRINT(QUAD): output;
MPRINT(QUAD): ticker = "_W5000";
MPRINT(QUAD): wgt = 1 / 6;
MPRINT(QUAD): output;

```

NOTE: The data set WORK.\_Q1 has 6 observations and 2 variables.

NOTE: DATA statement used:  
 real time 0.02 seconds  
 cpu time 0.02 seconds

```

MPRINT(QUAD): proc transpose data=_q1 out=_q1;
MPRINT(QUAD): var wgt;
MPRINT(QUAD): id ticker;
MPRINT(QUAD): run;

```

NOTE: There were 6 observations read from the data set WORK.\_Q1.

NOTE: The data set WORK.\_Q1 has 1 observations and 7 variables.

NOTE: PROCEDURE TRANSPOSE used:  
 real time 0.01 seconds  
 cpu time 0.01 seconds

```

MPRINT(QUAD): data _q1;
MPRINT(QUAD): format _name_ $8.;
MPRINT(QUAD): set _q1;
MPRINT(QUAD): _type_ = 'PARMS';
MPRINT(QUAD): _RHS_ = .;

```

NOTE: There were 1 observations read from the data set WORK.\_Q1.

NOTE: The data set WORK.\_Q1 has 1 observations and 9 variables.

NOTE: DATA statement used:  
 real time 0.01 seconds  
 cpu time 0.02 seconds

```

MPRINT(QUAD): proc append base=pf.tarquad data=_q1 force;

```

```
MPRINT(QUAD): run;
```

```
NOTE: Appending WORK._Q1 to PF.TARQUAD.
NOTE: There were 1 observations read from the data set WORK._Q1.
NOTE: 1 observations added.
NOTE: The data set PF.TARQUAD has 10 observations and 9 variables.
NOTE: PROCEDURE APPEND used:
```

```
real time      0.01 seconds
cpu time       0.00 seconds
```

```
MPRINT(T2QCONST): proc sql noprint;
MPRINT(T2QCONST): select count(*) into :cnt from aarange;
```

```
NOTE: PROCEDURE SQL used:
real time      0.00 seconds
cpu time       0.00 seconds
```

```
MPRINT(T2QCONST): proc sql noprint;
```

```
MPRINT(T2QCONST): select var, minwgt,maxwgt into :vname1, :minwgt1, :maxwgt1 - :minwgt7, :maxwgt1 - :maxwgt7 from aarange;
NOTE: PROCEDURE SQL used:
```

```
real time      0.00 seconds
cpu time       0.01 seconds
```

```
MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): format _name_ $8. ticker $8. wgt 15.8 _type_ $8. _rhs_ 15.8;
MPRINT(T2QCONST): if l=2;
```

```
MPRINT(T2QCONST): _name_='';
```

```
MPRINT(T2QCONST): ticker = '';
```

```
MPRINT(T2QCONST): wgt = .;
```

```
MPRINT(T2QCONST): _type_ = '';
```

```
MPRINT(T2QCONST): _rhs_ = .;
```

```
MPRINT(T2QCONST): run;
```

```
NOTE: The data set WORK._Q7 has 0 observations and 5 variables.
```

```
NOTE: DATA statement used:
```

```
real time      0.01 seconds
cpu time       0.01 seconds
```

```
MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7 quad_tv(in=inb keep=ticker STOCKS rename=(STOCKS=wgt ));
MPRINT(T2QCONST): if inb then do;
```

```
MPRINT(T2QCONST): _name_ = "STOCKS";
```

```
MPRINT(T2QCONST): _type_ = 'ge';
```

```
MPRINT(T2QCONST): _rhs_ = 0;
```

```
MPRINT(T2QCONST): end;
```

```
MPRINT(T2QCONST): run;
```

```
NOTE: There were 0 observations read from the data set WORK._Q7.
```

```
NOTE: There were 6 observations read from the data set WORK.QUAD_TV.
```

```
NOTE: The data set WORK._Q7 has 6 observations and 5 variables.
```

```
NOTE: DATA statement used:
```

```
real time      0.02 seconds
cpu time       0.01 seconds
```

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7 quad_tv(in=inb keep=ticker STOCKS rename=(STOCKS=wtg));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "STOCKS";
MPRINT(T2QCONST):   _type_ = 'le';
MPRINT(T2QCONST):   _rhs_ = 0.8925;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 6 observations read from the data set WORK.\_Q7.

NOTE: There were 6 observations read from the data set WORK.QUAD\_TV.

NOTE: The data set WORK.\_Q7 has 12 observations and 5 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.02 seconds

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7 quad_tv(in=inb keep=ticker BONDS rename=(BONDS=wtg ));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "BONDS";
MPRINT(T2QCONST):   _type_ = 'ge';
MPRINT(T2QCONST):   _rhs_ = 0;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 12 observations read from the data set WORK.\_Q7.

NOTE: There were 6 observations read from the data set WORK.QUAD\_TV.

NOTE: The data set WORK.\_Q7 has 18 observations and 5 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.01 seconds

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7 quad_tv(in=inb keep=ticker BONDS rename=(BONDS=wtg));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "BONDS";
MPRINT(T2QCONST):   _type_ = 'le';
MPRINT(T2QCONST):   _rhs_ = 1;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 18 observations read from the data set WORK.\_Q7.

NOTE: There were 6 observations read from the data set WORK.QUAD\_TV.

NOTE: The data set WORK.\_Q7 has 24 observations and 5 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.01 seconds

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7 quad_tv(in=inb keep=ticker IGBONDS rename=(IGBONDS=wtg ));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "IGBONDS";
MPRINT(T2QCONST):   _type_ = 'ge';
MPRINT(T2QCONST):   _rhs_ = 0.1125;
MPRINT(T2QCONST): end;

```

```
MPRINT(T2QCONST): run;
```

NOTE: There were 24 observations read from the data set WORK.\_Q7.

NOTE: There were 6 observations read from the data set WORK.QUAD\_TV.

NOTE: The data set WORK.\_Q7 has 30 observations and 5 variables.

NOTE: DATA statement used:

```
real time      0.02 seconds
cpu time       0.02 seconds
```

```
MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7 quad_tv(in=inb keep=ticker IGBONDS rename=(IGBONDS=wtg));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "IGBONDS";
MPRINT(T2QCONST):   _type_ = 'le';
MPRINT(T2QCONST):   _rhs_ = 1;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;
```

NOTE: There were 30 observations read from the data set WORK.\_Q7.

NOTE: There were 6 observations read from the data set WORK.QUAD\_TV.

NOTE: The data set WORK.\_Q7 has 36 observations and 5 variables.

NOTE: DATA statement used:

```
real time      0.01 seconds
cpu time       0.02 seconds
```

```
MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7 quad_tv(in=inb keep=ticker CASH rename=(CASH=wtg));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "CASH";
MPRINT(T2QCONST):   _type_ = 'ge';
MPRINT(T2QCONST):   _rhs_ = 0;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;
```

NOTE: There were 36 observations read from the data set WORK.\_Q7.

NOTE: There were 6 observations read from the data set WORK.QUAD\_TV.

NOTE: The data set WORK.\_Q7 has 42 observations and 5 variables.

NOTE: DATA statement used:

```
real time      0.01 seconds
cpu time       0.02 seconds
```

```
MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7 quad_tv(in=inb keep=ticker CASH rename=(CASH=wtg));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "CASH";
MPRINT(T2QCONST):   _type_ = 'le';
MPRINT(T2QCONST):   _rhs_ = 1;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;
```

NOTE: There were 42 observations read from the data set WORK.\_Q7.

NOTE: There were 6 observations read from the data set WORK.QUAD\_TV.

NOTE: The data set WORK.\_Q7 has 48 observations and 5 variables.

NOTE: DATA statement used:

```
real time      0.01 seconds
```

cpu time 0.02 seconds

```
MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7 quad_tv(in=inb keep=ticker FSTOCKS rename=(FSTOCKS=wtg ));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST): _name_ = "FSTOCKS";
MPRINT(T2QCONST): _type_ = 'ge';
MPRINT(T2QCONST): _rhs_ = 0;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;
```

NOTE: There were 48 observations read from the data set WORK.\_Q7.  
 NOTE: There were 6 observations read from the data set WORK.QUAD\_TV.  
 NOTE: The data set WORK.\_Q7 has 54 observations and 5 variables.  
 NOTE: DATA statement used:

real time 0.02 seconds  
 cpu time 0.01 seconds

```
MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7 quad_tv(in=inb keep=ticker FSTOCKS rename=(FSTOCKS=wtg ));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST): _name_ = "FSTOCKS";
MPRINT(T2QCONST): _type_ = 'le';
MPRINT(T2QCONST): _rhs_ = 0.18;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;
```

NOTE: There were 54 observations read from the data set WORK.\_Q7.  
 NOTE: There were 6 observations read from the data set WORK.QUAD\_TV.  
 NOTE: The data set WORK.\_Q7 has 60 observations and 5 variables.  
 NOTE: DATA statement used:

real time 0.01 seconds  
 cpu time 0.01 seconds

```
MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7 quad_tv(in=inb keep=ticker HYBONDS rename=(HYBONDS=wtg ));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST): _name_ = "HYBONDS";
MPRINT(T2QCONST): _type_ = 'ge';
MPRINT(T2QCONST): _rhs_ = 0;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;
```

NOTE: There were 60 observations read from the data set WORK.\_Q7.  
 NOTE: There were 6 observations read from the data set WORK.QUAD\_TV.  
 NOTE: The data set WORK.\_Q7 has 66 observations and 5 variables.  
 NOTE: DATA statement used:

real time 0.02 seconds  
 cpu time 0.01 seconds

```
MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7 quad_tv(in=inb keep=ticker HYBONDS rename=(HYBONDS=wtg ));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST): _name_ = "HYBONDS";
```

```

MPRINT(T2QCONST):  _type_ = 'le';
MPRINT(T2QCONST):  _rhs_ = 0.1;
MPRINT(T2QCONST):  end;
MPRINT(T2QCONST):  run;

```

NOTE: There were 66 observations read from the data set WORK.\_Q7.  
 NOTE: There were 6 observations read from the data set WORK.QUAD\_TV.  
 NOTE: The data set WORK.\_Q7 has 72 observations and 5 variables.

```

NOTE: DATA statement used:
      real time      0.02 seconds
      cpu time       0.02 seconds

```

```

MPRINT(T2QCONST):  data _q7;
MPRINT(T2QCONST):  set _q7 quad_tv(in=inb keep=ticker DSTOCKS rename=(DSTOCKS=wtg ));
MPRINT(T2QCONST):  if inb then do;
MPRINT(T2QCONST):  _name_ = "DSTOCKS";
MPRINT(T2QCONST):  _type_ = 'ge';
MPRINT(T2QCONST):  _rhs_ = 0;
MPRINT(T2QCONST):  end;
MPRINT(T2QCONST):  run;

```

NOTE: There were 72 observations read from the data set WORK.\_Q7.  
 NOTE: There were 6 observations read from the data set WORK.QUAD\_TV.  
 NOTE: The data set WORK.\_Q7 has 78 observations and 5 variables.

```

NOTE: DATA statement used:
      real time      0.02 seconds
      cpu time       0.01 seconds

```

```

MPRINT(T2QCONST):  data _q7;
MPRINT(T2QCONST):  set _q7 quad_tv(in=inb keep=ticker DSTOCKS rename=(DSTOCKS=wtg ));
MPRINT(T2QCONST):  if inb then do;
MPRINT(T2QCONST):  _name_ = "DSTOCKS";
MPRINT(T2QCONST):  _type_ = 'le';
MPRINT(T2QCONST):  _rhs_ = 0.94;
MPRINT(T2QCONST):  end;
MPRINT(T2QCONST):  run;

```

NOTE: There were 78 observations read from the data set WORK.\_Q7.  
 NOTE: There were 6 observations read from the data set WORK.QUAD\_TV.  
 NOTE: The data set WORK.\_Q7 has 84 observations and 5 variables.

```

NOTE: DATA statement used:
      real time      0.02 seconds
      cpu time       0.02 seconds

```

```

MPRINT(T2QCONST):  proc sort data=_q7;
MPRINT(T2QCONST):  by _name_ _type_ _rhs_;
MPRINT(T2QCONST):  run;

```

NOTE: There were 84 observations read from the data set WORK.\_Q7.  
 NOTE: The data set WORK.\_Q7 has 84 observations and 5 variables.  
 NOTE: PROCEDURE SORT used:

```

      real time      0.01 seconds
      cpu time       0.02 seconds

```



```

MPRINT(T2QCONST):  proc transpose data=_q7 out=ttconst(drop=_label_);
MPRINT(T2QCONST):  by _name_ _type_ _rhs_;
MPRINT(T2QCONST):  id ticker;
MPRINT(T2QCONST):  var wgt;
MPRINT(T2QCONST):  run;

```

NOTE: There were 84 observations read from the data set WORK.\_Q7.

NOTE: The data set WORK.TTCONST has 14 observations and 9 variables.

NOTE: PROCEDURE TRANSPOSE used:

real time	0.02 seconds
cpu time	0.02 seconds

```

MPRINT(TRASH):  proc datasets nolist lib=work;
MPRINT(TRASH):  delete _q7;
MPRINT(TRASH):  run;

```

NOTE: Deleting WORK.\_Q7 (memtype=DATA).

```
MPRINT(T2QCONST):  ;
```

```
MPRINT(QUAD):  ;
```

NOTE: PROCEDURE DATASETS used:

real time	0.02 seconds
cpu time	0.00 seconds

```

MPRINT(QUAD):  proc append base=pf.tarquad data=ttconst force;
MPRINT(QUAD):  run;

```

NOTE: Appending WORK.TTCONST to PF.TARQUAD.

NOTE: There were 14 observations read from the data set WORK.TTCONST.

NOTE: 14 observations added.

NOTE: The data set PF.TARQUAD has 24 observations and 9 variables.

NOTE: PROCEDURE APPEND used:

real time	0.01 seconds
cpu time	0.00 seconds

```

MPRINT(QUAD):  data _null_;
MPRINT(QUAD):  title "Minimum Tracking Error Portfolio";
MPRINT(QUAD):  run;

```

NOTE: DATA statement used:

real time	0.00 seconds
cpu time	0.00 seconds

```

MPRINT(CALLNLP):  proc nlp inquad=pf.tarquad outest=pf.taroutquad cov=2 ;
MPRINT(CALLNLP):  min;
MPRINT(CALLNLP):  parms CPO _BOND _CASH_ _EAFE _ML_HYM _W5000 ;
MPRINT(CALLNLP):  run;

```

NOTE: Your code contains 0 program statements.

NOTE: Analytic derivatives are used with a quadratic optimization problem.

NOTE: The Hessian matrix of the QP is singular.

NOTE: Initial point was changed to be feasible for boundary and linear constraints.

NOTE: ABSGCONV convergence criterion satisfied.

NOTE: There were 24 observations read from the data set PF.TARQUAD.

NOTE: The data set PF.TAROUTQUAD has 47 observations and 11 variables.

NOTE: The PROCEDURE NLP printed pages 1-4.

NOTE: PROCEDURE NLP used:

real time	0.50 seconds
cpu time	0.06 seconds

```

MPRINT(CALLNLP):  proc sql noprint;
MPRINT(CALLNLP):  select _rhs_ into :objfnval from pf.taroutquad where _type_ = 'PARMS';
MPRINT(QUAD):    ;

```

NOTE: PROCEDURE SQL used:

real time	0.00 seconds
cpu time	0.01 seconds

```

MPRINT(TRASH):   proc datasets nolist lib=work;
MPRINT(TRASH):   delete _q1 _q2;
MPRINT(TRASH):   run;

```

NOTE: The file WORK\_Q2 (mentype=DATA) was not found, but appears on a DELETE statement.

NOTE: Deleting WORK\_Q1 (mentype=DATA).

```

MPRINT(QUAD):    ;
MPRINT(TARADJ):  ;

```

NOTE: PROCEDURE DATASETS used:

real time	0.01 seconds
cpu time	0.01 seconds

```

MPRINT(Q2CTW):   proc sql;

```

```

MPRINT(Q2CTW):   select _rhs_ into :objfnval from pf.taroutquad where _type_ = 'PARMS';

```

NOTE: The PROCEDURE SQL printed page 5.

NOTE: PROCEDURE SQL used:

real time	0.00 seconds
cpu time	0.01 seconds

```

MPRINT(Q2CTW):   data newtar(drop=_type_ _rhs_);
MPRINT(Q2CTW):   format cticker $8.;
MPRINT(Q2CTW):   set pf.taroutquad(drop=_name_ _iter_ _tech_ where=(_type_='PARMS'));
MPRINT(Q2CTW):   cticker = "newtar";
MPRINT(Q2CTW):   call symput("OBJFNVAL",put(_rhs_,best.));
MPRINT(Q2CTW):   if _rhs_ ne . then do;
MPRINT(Q2CTW):     output;
MPRINT(Q2CTW):     call symput("OSTATUS","0");
MPRINT(Q2CTW):   end;
MPRINT(Q2CTW):   else do;
MPRINT(Q2CTW):     call symput("OSTATUS","1");
MPRINT(Q2CTW):   end;
MPRINT(Q2CTW):   run;

```

NOTE: There were 1 observations read from the data set PF.TAROUTQUAD.

WHERE \_type\_='PARMS';

NOTE: The data set WORK.NEWSTAR has 1 observations and 7 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.01 seconds

```

MPRINT(Q2CTW) : proc transpose data=newtar out=newtar(rename=(_name_=ticker coll=wtg));
MPRINT(Q2CTW) : by ticker;
MPRINT(Q2CTW) : run;

```

NOTE: There were 1 observations read from the data set WORK.NEWTA.

NOTE: The data set WORK.NEWTA has 6 observations and 3 variables.

NOTE: PROCEDURE TRANSPOSE used:

real time	0.02 seconds
cpu time	0.02 seconds

```

MPRINT(TARADJ) : ;
MPRINT(CTWRET) : data _r7;
MPRINT(CTWRET) : set newtar(where=(wtg ne 0));
MPRINT(CTWRET) : run;

```

NOTE: There were 5 observations read from the data set WORK.NEWTA.

NOTE: WHERE wgt not = 0;

NOTE: The data set WORK.\_R7 has 5 observations and 3 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.01 seconds

```

MPRINT(VARENUM) : proc sql;
MPRINT(VARENUM) : create table _r2 as select distinct ticker as ticker from _r7 order by ticker;
MPRINT(VARENUM) : ;

```

NOTE: Table WORK.\_R2 created, with 5 rows and 1 columns.

NOTE: PROCEDURE SQL used:

real time	0.01 seconds
cpu time	0.00 seconds

```

MPRINT(VARENUM) : data _r2;
MPRINT(VARENUM) : set _r2;
MPRINT(VARENUM) : format tickid $8.;
MPRINT(VARENUM) : tickid = "_w" || left(trim(put(_n,8)));
MPRINT(VARENUM) : run;

```

NOTE: There were 5 observations read from the data set WORK.\_R2.

NOTE: The data set WORK.\_R2 has 5 observations and 2 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.00 seconds

```

MPRINT(CTWRET) : ;
MPRINT(DS2MA) : proc sql noprint;
MPRINT(DS2MA) : select count(distinct ticker) into :_ct0 from _r2 where ticker ne '' ;
NOTE: PROCEDURE SQL used:
real time      0.01 seconds
cpu time       0.01 seconds

```

```

MPRINT(DS2MA) : proc sql noprint;
MPRINT(DS2MA) : select distinct ticker into :_ct1 - :_ct5 from _r2 where ticker ne '' order by ticker;
MPRINT(CTWRET) : ;
NOTE: PROCEDURE SQL used:

```

real time 0.00 seconds  
cpu time 0.01 seconds

```
MPRINT(V_REPLAC): proc sort data=_r7 out=_a1;
MPRINT(V_REPLAC): by ticker;
```

NOTE: There were 5 observations read from the data set WORK.\_R7.

NOTE: The data set WORK.\_A1 has 5 observations and 3 variables.

NOTE: PROCEDURE SORT used:

real time 0.01 seconds  
cpu time 0.01 seconds

```
MPRINT(V_REPLAC): proc sort data=_r2(keep=ticker tickid) out=_a2;
```

```
MPRINT(V_REPLAC): by ticker;
```

NOTE: There were 5 observations read from the data set WORK.\_R2.

NOTE: The data set WORK.\_A2 has 5 observations and 2 variables.

NOTE: PROCEDURE SORT used:

real time 0.01 seconds  
cpu time 0.00 seconds

```
MPRINT(V_REPLAC): data _r3 (drop=ticker rename=(__x=ticker));
MPRINT(V_REPLAC): merge _a1(in=ina) _a2(rename=(tickid = __x ticker=ticker));
```

```
MPRINT(V_REPLAC): by ticker;
```

```
MPRINT(V_REPLAC): if ina;
```

```
MPRINT(V_REPLAC): run;
```

NOTE: There were 5 observations read from the data set WORK.\_A1.

NOTE: There were 5 observations read from the data set WORK.\_A2.

NOTE: The data set WORK.\_R3 has 5 observations and 3 variables.

NOTE: DATA statement used:

real time 0.02 seconds  
cpu time 0.03 seconds

```
MPRINT(TRASH): proc datasets nolist lib=work;
```

```
MPRINT(TRASH): delete _a1 _a2;
```

```
MPRINT(TRASH): run;
```

NOTE: Deleting WORK.\_A1 (memtype=DATA).

NOTE: Deleting WORK.\_A2 (memtype=DATA).

```
MPRINT(V_REPLAC): ;
```

```
MPRINT(CTWRET): ;
```

NOTE: PROCEDURE DATASETS used:

real time 0.02 seconds  
cpu time 0.00 seconds

```
MPRINT(L2WTRAN): proc sort data=_r3;
```

```
MPRINT(L2WTRAN): by cticker;
```

```
MPRINT(L2WTRAN): run;
```

NOTE: There were 5 observations read from the data set WORK.\_R3.

NOTE: The data set WORK.\_R3 has 5 observations and 3 variables.

NOTE: PROCEDURE SORT used:

real time 0.01 seconds  
cpu time 0.00 seconds

```
MPRINT(L2WTRAN): proc transpose data=_r3(keep=wgt ticker cticker) out=_r3(keep=cticker _numeric_);
MPRINT(L2WTRAN): var wgt;
MPRINT(L2WTRAN): id ticker;
MPRINT(L2WTRAN): by cticker;
MPRINT(L2WTRAN): run;
```

NOTE: There were 5 observations read from the data set WORK.\_R3.  
NOTE: The data set WORK.\_R3 has 1 observations and 6 variables.  
NOTE: PROCEDURE TRANSPOSE used:  
real time 0.02 seconds  
cpu time 0.01 seconds

```
MPRINT(CTWRET): ;
MPRINT(DSNONULL): data _r3;
MPRINT(DSNONULL): set _r3;
MPRINT(DSNONULL): array _x _numeric_;
MPRINT(DSNONULL): do over _x;
MPRINT(DSNONULL): if _x = . then _x = 0;
MPRINT(DSNONULL): end;
MPRINT(DSNONULL): run;
```

NOTE: There were 1 observations read from the data set WORK.\_R3.  
NOTE: The data set WORK.\_R3 has 1 observations and 6 variables.  
NOTE: DATA statement used:  
real time 0.01 seconds  
cpu time 0.01 seconds

```
MPRINT(CTWRET): ;
MPRINT(CLEANRET): proc sql;
MPRINT(CLEANRET): create table _rc2 as select distinct ticker from _r2;
NOTE: Table WORK._RC2 created, with 5 rows and 1 columns.
```

NOTE: PROCEDURE SQL used:  
real time 0.01 seconds  
cpu time 0.00 seconds

```
MPRINT(CLEANRET): data _rc2;
MPRINT(CLEANRET): set _rc2 end=eof;
MPRINT(CLEANRET): if _n_ eq 1 then call symput("_CRA",ticker);
MPRINT(CLEANRET): if eof then call symput("_CR2",ticker);
MPRINT(CLEANRET): return = 0;
MPRINT(CLEANRET): run;
```

NOTE: There were 5 observations read from the data set WORK.\_RC2.  
NOTE: The data set WORK.\_RC2 has 5 observations and 2 variables.  
NOTE: DATA statement used:  
real time 0.01 seconds  
cpu time 0.00 seconds

```
MPRINT(L2WTRAN): proc transpose data=_rc2(keep=return ticker ) out=_rc2(keep= _numeric_);
```

```
.MPRINT(L2WTRAN):  var return;
.MPRINT(L2WTRAN):  id ticker;
.MPRINT(L2WTRAN):  ;
.MPRINT(L2WTRAN):  run;
```

NOTE: There were 5 observations read from the data set WORK\_RC2.  
NOTE: The data set WORK\_RC2 has 1 observations and 5 variables.

```
NOTE: PROCEDURE TRANSPOSE used:
      real time      0.01 seconds
      cpu time       0.00 seconds
```

```
MPRINT(CLEANRET):  ;
MPRINT(CLEANRET):  data _r5(keep=date CPO -- _W5000 );
MPRINT(CLEANRET):  merge _rc2 _tadtt;
MPRINT(CLEANRET):  output;
MPRINT(CLEANRET):  run;
```

NOTE: There were 1 observations read from the data set WORK\_RC2.  
NOTE: There were 36 observations read from the data set WORK\_TADTT.  
NOTE: The data set WORK\_R5 has 36 observations and 6 variables.

```
NOTE: DATA statement used:
      real time      0.02 seconds
      cpu time       0.00 seconds
```

```
MPRINT(TRASH):    proc datasets nolist lib=work;
MPRINT(TRASH):    delete _rc2;
MPRINT(TRASH):    run;
```

```
NOTE: Deleting WORK_RC2 (memtype=DATA).
MPRINT(CLEANRET):  ;
MPRINT(CTWRET):    ;
```

```
NOTE: PROCEDURE DATASETS used:
      real time      0.02 seconds
      cpu time       0.01 seconds
```

```
MPRINT(CTWRET):   data _r6;
MPRINT(CTWRET):   set _r5(rename=( CPO=_R1 _BOND=_R2 _CASH=_R3 _EAFE=_R4 _W5000=_R5 ));
MPRINT(CTWRET):   run;
```

NOTE: There were 36 observations read from the data set WORK\_R5.  
NOTE: The data set WORK\_R6 has 36 observations and 6 variables.

```
NOTE: DATA statement used:
      real time      0.01 seconds
      cpu time       0.00 seconds
```

```
MPRINT(CTWRET):   data _r7(keep=cticker date return);
MPRINT(CTWRET):   set _r3 nobs=_nobs;
MPRINT(CTWRET):   array _w[5] _w1 - _w5;
MPRINT(CTWRET):   array _nw[5];
MPRINT(CTWRET):   retain _nw1 - _nw5;
MPRINT(CTWRET):   retain _w1 - _w5 ;
MPRINT(CTWRET):   do _i = 1 to 5;
MPRINT(CTWRET):   _nw[_i] = _w[_i];
```

```

MPRINT(CTWRET):      end;
MPRINT(CTWRET):      _zportf + 1;
MPRINT(CTWRET):      if _nobs > 50 and 10*int(_zportf/10) = _zportf then put "portfolio " _zportf " / " _nobs;
MPRINT(CTWRET):      do _rno = 1 to _robs;
MPRINT(CTWRET):      set _r6 nobs=_robs point=_rno;
MPRINT(CTWRET):      array _r[5] _r1 - _r5;
MPRINT(CTWRET):      _sum = 0;
MPRINT(CTWRET):      return = 0;
MPRINT(CTWRET):      do _i = 1 to 5;
MPRINT(CTWRET):      if _nw[_i] ne 0 then do;
MPRINT(CTWRET):      return = return + _nw[_i] * _r[_i];
MPRINT(CTWRET):      end;
MPRINT(CTWRET):      end;
MPRINT(CTWRET):      output _r7;
MPRINT(CTWRET):      ;
MPRINT(CTWRET):      end;
MPRINT(CTWRET):      ;
MPRINT(CTWRET):      run;

```

NOTE: There were 1 observations read from the data set WORK.\_R3.

NOTE: The data set WORK.\_R7 has 36 observations and 3 variables.

NOTE: DATA statement used:

```

real time      0.02 seconds
cpu time       0.01 seconds

```

```

MPRINT(CTWRET):      proc sort data=_r7;
MPRINT(CTWRET):      by date cticker;

```

NOTE: There were 36 observations read from the data set WORK.\_R7.

NOTE: The data set WORK.\_R7 has 36 observations and 3 variables.

NOTE: PROCEDURE SORT used:

```

real time      0.01 seconds
cpu time       0.00 seconds

```

```

MPRINT(CTWRET):      proc transpose data=_r7 out=_dtf(keep = _numeric_);
MPRINT(CTWRET):      var return;
MPRINT(CTWRET):      id cticker;
MPRINT(CTWRET):      by date;
MPRINT(CTWRET):      run;

```

NOTE: There were 36 observations read from the data set WORK.\_R7.

NOTE: The data set WORK.\_DTF has 36 observations and 2 variables.

NOTE: PROCEDURE TRANSPOSE used:

```

real time      0.02 seconds
cpu time       0.01 seconds

```

```

MPRINT(TERR_CTW):    ;
MPRINT(W2LTRAN):      proc transpose data=_dtf out=_dtr(keep = date ticker coll rename=(coll=return)) name=ticker;
MPRINT(W2LTRAN):      by date;
MPRINT(W2LTRAN):      run;

```

NOTE: There were 36 observations read from the data set WORK.\_DTF.

NOTE: The data set WORK.\_DTR has 36 observations and 3 variables.

NOTE: PROCEDURE TRANSPOSE used:

```

real time      0.02 seconds

```

cpu time 0.00 seconds

```

MPRINT(W2LTRAN): data _dtr;
MPRINT(W2LTRAN): length ticker $8;
MPRINT(W2LTRAN): set _dtr(where=(return ne .));
MPRINT(W2LTRAN): run;

```

NOTE: There were 36 observations read from the data set WORK.\_DTR.

WHERE return not = .;

NOTE: The data set WORK.\_DTR has 36 observations and 3 variables.

NOTE: DATA statement used:

real time 0.01 seconds  
cpu time 0.01 seconds

```

MPRINT(DTT2DTR): ;
MPRINT(TERR_CTW): ;
MPRINT(TERR_CTW): proc sql noprint;
MPRINT(TERR_CTW): select std(return-0)*sqrt(12) into :tadtt b where a.date=b.date;
tracking error = 0.147216
MPRINT(TARADJ): ;

```

Adjusted Target Tracking Error = 0.147216

NOTE: PROCEDURE SQL used:

real time 0.02 seconds  
cpu time 0.01 seconds

```

MPRINT(TARADJ): proc sql noprint;
MPRINT(TARADJ): create table _newtar as select sum(wgt*(dstocks+fstocks)) as fstocks, sum(wgt*fstocks) as fstocks,
sum(wgt*(lgbonds+hybonds)) as bonds, sum(wgt*cash) as cash from quad_tv a, newtar b where a.ticker=b.ticker;
NOTE: Table WORK._NEWTAR created, with 1 rows and 4 columns.

```

NOTE: PROCEDURE SQL used:

real time 0.04 seconds  
cpu time 0.01 seconds

```

MPRINT(W2LTRAN): proc transpose data=_newtar out=_newtar(keep = var coll rename=(coll=newtar)) name=var;
MPRINT(W2LTRAN): ;
MPRINT(W2LTRAN): run;

```

NOTE: There were 1 observations read from the data set WORK.\_NEWTAR.

NOTE: The data set WORK.\_NEWTAR has 4 observations and 2 variables.

NOTE: PROCEDURE TRANSPOSE used:

real time 0.01 seconds  
cpu time 0.02 seconds

```

MPRINT(W2LTRAN): data _newtar;
MPRINT(W2LTRAN): length var $8;
MPRINT(W2LTRAN): set _newtar(where=(newtar ne .));
MPRINT(W2LTRAN): run;

```

NOTE: There were 4 observations read from the data set WORK.\_NEWTAR.

WHERE newtar not = .;

NOTE: The data set WORK.\_NEWTAR has 4 observations and 2 variables.

NOTE: DATA statement used:



```

real time      0.01 seconds
cpu time       0.01 seconds

```

```

MPRINT(TARADJ);
MPRINT(TARADJ);  proc sort data=_newtar;
MPRINT(TARADJ);  by var;
MPRINT(TARADJ);  run;

```

NOTE: There were 4 observations read from the data set WORK.\_NEWTAR.  
NOTE: The data set WORK.\_NEWTAR has 4 observations and 2 variables.

```

NOTE: PROCEDURE SORT used:
real time      0.01 seconds
cpu time       0.00 seconds

```

```

MPRINT(TARADJ);  proc sort data=pf.aaconst;
MPRINT(TARADJ);  by var;
NOTE: There were 6 observations read from the data set PF.AACONST.
NOTE: The data set PF.AACONST has 6 observations and 6 variables.
NOTE: PROCEDURE SORT used:
real time      0.02 seconds
cpu time       0.02 seconds

```

```

MPRINT(TARADJ);  data pf.adjconst(drop=newtar);
MPRINT(TARADJ);  merge _newtar(in=inb) pf.aaconst;
MPRINT(TARADJ);  by var;
MPRINT(TARADJ);  if newtar ne . then do;
MPRINT(TARADJ);  target=newtar;
MPRINT(TARADJ);  end;
MPRINT(TARADJ);  minwgt=target-range;
MPRINT(TARADJ);  maxwgt=target+range;
MPRINT(TARADJ);  run;

```

NOTE: There were 4 observations read from the data set WORK.\_NEWTAR.  
NOTE: There were 6 observations read from the data set PF.AACONST.  
NOTE: The data set PF.ADJCONST has 6 observations and 6 variables.  
NOTE: DATA statement used:

```

real time      0.02 seconds
cpu time       0.01 seconds

```

```

MPRINT(OPTO_PF);
MPRINT(OPTO_PF);
MPRINT(DS2MA);  proc sql noprint;
MPRINT(DS2MA);  select count(distinct ticker) into :_ma0 from pf.initds where ticker ne '';
NOTE: PROCEDURE SQL used:
real time      0.02 seconds
cpu time       0.01 seconds

```

```

MPRINT(DS2MA);  proc sql noprint;
MPRINT(DS2MA);  select distinct ticker into :_ma1 - :_ma9 from pf.initds where ticker ne '' order by ticker;
MPRINT(OPTO_CTW);
NOTE: PROCEDURE SQL used:
real time      0.00 seconds
cpu time       0.01 seconds

```

```

MPRINT(DS2MA):      proc sql noprint;
MPRINT(DS2MA):      select count(distinct cticker) into :_p0 from pf.initds where cticker ne '' ;
NOTE: PROCEDURE SQL used:
      real time      0.01 seconds
      cpu time       0.01 seconds

MPRINT(DS2MA):      proc sql noprint;
MPRINT(DS2MA):      select distinct cticker into :_p1 - :_p1 from pf.initds where cticker ne '' order by cticker;
MPRINT(OPTO_CTW):    ;
NOTE: PROCEDURE SQL used:
      real time      0.00 seconds
      cpu time       0.01 seconds

MPRINT(OPTO_CTW):    proc sql noprint;
MPRINT(OPTO_CTW):    create table _ticks as select distinct ticker from pf.initds;
NOTE: Table WORK._TICKS created, with 9 rows and 1 columns.

MPRINT(OPTO_CTW):    insert into _ticks(ticker) values ("_BENCH");
NOTE: 1 row was inserted into WORK._TICKS.

NOTE: PROCEDURE SQL used:
      real time      0.02 seconds
      cpu time       0.00 seconds

MPRINT(OPTO_CTW):    proc sort data=_ticks;
MPRINT(OPTO_CTW):    by ticker;
MPRINT(OPTO_CTW):    run;

NOTE: There were 10 observations read from the data set WORK._TICKS.
NOTE: The data set WORK._TICKS has 10 observations and 1 variables.
NOTE: PROCEDURE SORT used:
      real time      0.01 seconds
      cpu time       0.01 seconds

MPRINT(CLEANRET):    proc sql;
MPRINT(CLEANRET):    create table _rc2 as select distinct ticker from _ticks;
NOTE: Table WORK._RC2 created, with 10 rows and 1 columns.

NOTE: PROCEDURE SQL used:
      real time      0.01 seconds
      cpu time       0.02 seconds

MPRINT(CLEANRET):    data _rc2;
MPRINT(CLEANRET):    set _rc2 end=eof;
MPRINT(CLEANRET):    if _n_ eq 1 then call symput("_CRA",ticker);
MPRINT(CLEANRET):    if eof then call symput("_CR2",ticker);
MPRINT(CLEANRET):    return = 0;
MPRINT(CLEANRET):    run;

NOTE: There were 10 observations read from the data set WORK._RC2.
NOTE: The data set WORK._RC2 has 10 observations and 2 variables.

```

```

NOTE: DATA statement used:
      real time      0.01 seconds
      cpu time       0.02 seconds

MPRINT(L2WTRAN):  proc transpose data=_rc2(keep=return ticker ) out=_rc2(keep= _numeric_);
MPRINT(L2WTRAN):  var return;
MPRINT(L2WTRAN):  id ticker;
MPRINT(L2WTRAN):  ;
MPRINT(L2WTRAN):  run;

NOTE: There were 10 observations read from the data set WORK._RC2.
NOTE: The data set WORK._RC2 has 1 observations and 10 variables.
NOTE: PROCEDURE TRANSPOSE used:
      real time      0.01 seconds
      cpu time       0.02 seconds

MPRINT(CLEANRET): ;
MPRINT(CLEANRET):  data _dtt2(keep=date CP0 -- _GIC_ );
MPRINT(CLEANRET):  merge _rc2 pf.mdl_dtt;
MPRINT(CLEANRET):  array __x CP0 -- _GIC_ ;
MPRINT(CLEANRET):  do over __x;
MPRINT(CLEANRET):  if __x = . then __x = 0;
MPRINT(CLEANRET):  end;
MPRINT(CLEANRET):  output;
MPRINT(CLEANRET):  run;

NOTE: There were 1 observations read from the data set WORK._RC2.
NOTE: There were 36 observations read from the data set PF.MDL.DTT.
NOTE: The data set WORK._DTT2 has 36 observations and 11 variables.
NOTE: DATA statement used:
      real time      0.03 seconds
      cpu time       0.01 seconds

MPRINT(TRASH):  proc datasets nolist lib=work;
MPRINT(TRASH):  delete _rc2;
MPRINT(TRASH):  run;

NOTE: Deleting WORK._RC2 (mentype=DATA).
MPRINT(CLEANRET): ;
MPRINT(OPTO_CTW): ;

NOTE: PROCEDURE DATASETS used:
      real time      0.02 seconds
      cpu time       0.01 seconds

MPRINT(OPTO_CTW):  data _dtt1(drop=_name);
MPRINT(OPTO_CTW):  set _dtt2;
MPRINT(OPTO_CTW):  format _name $8.;
MPRINT(OPTO_CTW):  array __x _numeric_;
MPRINT(OPTO_CTW):  do over __x;
MPRINT(OPTO_CTW):  call vname(__x,_name);
MPRINT(OPTO_CTW):  if _name ne "_BENCH" and _name ne "DATE" then __x = __x - _BENCH;
MPRINT(OPTO_CTW):  end;

```

```

NOTE: There were 36 observations read from the data set WORK_DTT2.
NOTE: The data set WORK_DTT1 has 36 observations and 11 variables.
NOTE: DATA statement used:
      real time      0.02 seconds
      cpu time       0.02 seconds

MPRINT(OPTO_CTW):      proc corr cov data=dt1 outp=_covmat nosimple noprint;
MPRINT(OPTO_CTW):      var CPO FBNDX FCNTX FGR1X FLPSX FMAGX FOSFX FUSEX _GIC_;
MPRINT(OPTO_CTW):      run;

NOTE: The data set WORK_COVMAT has 21 observations and 11 variables.
NOTE: PROCEDURE CORR used:
      real time      0.01 seconds
      cpu time       0.01 seconds

MPRINT(DSV2MA):      proc contents data=pf.initsds(drop = wgt cticker ticker) out=_m1(keep=name varnum ) short noprint;
MPRINT(DSV2MA):      run;

NOTE: The data set WORK_M1 has 1 observations and 2 variables.
NOTE: PROCEDURE CONTENTS used:
      real time      0.02 seconds
      cpu time       0.01 seconds

MPRINT(DS2MA):      proc sql noprint;
MPRINT(DS2MA):      select count(distinct name) into :_oth0 from _m1 where name ne '' ;
NOTE: PROCEDURE SQL used:
      real time      0.01 seconds
      cpu time       0.01 seconds

MPRINT(DS2MA):      proc sql noprint;
MPRINT(DS2MA):      select distinct name into :_oth1 - :_oth0 from _m1 where name ne '' order by name;
MPRINT(DS2MA):      ;
NOTE: PROCEDURE SQL used:
      real time      0.00 seconds
      cpu time       0.01 seconds

MPRINT(TRASH):      proc datasets nolist lib=work;
MPRINT(TRASH):      delete _m1;
MPRINT(TRASH):      run;

NOTE: Deleting WORK_M1 (memtype=DATA) .
MPRINT(DSV2MA):      ;
MPRINT(KKVNORM):      ;
MPRINT(KKVNORM):      ;
MPRINT(KKVNORM):      ;
NOTE: PROCEDURE DATASETS used:
      real time      0.03 seconds
      cpu time       0.02 seconds

MPRINT(KKVNORM):      proc sql;
MPRINT(KKVNORM):      create table _kk3 as select cticker ,sum(wgt) as wgt from pf.initsds group by cticker;
NOTE: Table WORK_KK3 created, with 1 rows and 2 columns.

```

NOTE: PROCEDURE SQL used:

real time	0.01 seconds
cpu time	0.00 seconds

```

MPRINT(KKVNORM):  proc sql;
MPRINT(KKVNORM):  create table _ctw as select a.cticker, a.ticker ,fname , a.wgt/s.wgt as wgt from _kk3 s, pf.inits a where
MPRINT(KKVNORM):  s.cticker = a.cticker order by a.cticker, a.ticker;
NOTE: Table WORK._CTW created, with 9 rows and 4 columns.

```

NOTE: PROCEDURE SQL used:

real time	0.04 seconds
cpu time	0.02 seconds

```

MPRINT(TRASH):  proc datasets nolist lib=work;
MPRINT(TRASH):  delete _kk3;
MPRINT(TRASH):  run;

```

NOTE: Deleting WORK.\_KK3 (memtype=DATA).

```
MPRINT(KKVNORM):  ;
```

```
MPRINT(CTWNORM):  ;
```

```
MPRINT(OPTO_CTW):  ;
```

Optimizing 1 / 1 : PF000021 lambda=5000 kappa=0.6 linear=PVALUEM minval=0

NOTE: PROCEDURE DATASETS used:

real time	0.02 seconds
cpu time	0.00 seconds

```

MPRINT(OPTO_CTW):  data _initval(keep=ticker wgt);
MPRINT(OPTO_CTW):  set _ctw(where=(cticker = "PF000021"));
MPRINT(OPTO_CTW):  run;

```

NOTE: There were 9 observations read from the data set WORK.\_CTW.

```
WHERE cticker='PF000021';
```

NOTE: The data set WORK.\_INITVAL has 9 observations and 2 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.00 seconds

```
MPRINT(OPTO_CTW):  proc sort data=_initval;
```

```
MPRINT(OPTO_CTW):  by ticker;
```

```
MPRINT(OPTO_CTW):  run;
```

NOTE: There were 9 observations read from the data set WORK.\_INITVAL.

NOTE: The data set WORK.\_INITVAL has 9 observations and 2 variables.

NOTE: PROCEDURE SORT used:

real time	0.01 seconds
cpu time	0.00 seconds

```
MPRINT(OPTO_CTW):  data _in_tv;
```

```
MPRINT(OPTO_CTW):  merge _initval(keep=ticker in=ina) product.asset_tv;
```

```
MPRINT(OPTO_CTW):  by ticker;
```

```
MPRINT(OPTO_CTW):  if ina;
```

```
MPRINT(OPTO_CTW):  run;
```

NOTE: There were 9 observations read from the data set WORK.\_INITVAL.  
 NOTE: There were 968 observations read from the data set PRODUCT.ASSET\_TV.  
 NOTE: The data set WORK\_IN\_TV has 9 observations and 26 variables.

NOTE: DATA statement used:  
 real time 0.03 seconds  
 cpu time 0.02 seconds

```
MPRINT(DS2NA):      proc sql noprint;
MPRINT(DS2NA):      select count(distinct ticker) into :a10 from _in_tv where ticker ne '';
NOTE: PROCEDURE SQL used:
real time 0.02 seconds
cpu time 0.00 seconds
```

```
MPRINT(DS2NA):      proc sql noprint;
MPRINT(DS2NA):      select distinct ticker into :all - :a19 from _in_tv where ticker ne '' order by ticker;
MPRINT(QUAD):      ;
NOTE: PROCEDURE SQL used:
real time 0.00 seconds
cpu time 0.01 seconds
```

```
MPRINT(QUAD):      data pf.inquad(keep = _type_ _name_ CPO FBNDX FCNTX FGRIX FLPSX FMAGX FOSFX FUSEX _GIC_ _rhs_);
MPRINT(QUAD):      format _type_ $8. _name_ $8. _vname_ $8.;
MPRINT(QUAD):      set covmat(wher=( (_type_ = 'COV' and _name_ in ('CPO', 'FBNDX', 'FCNTX', 'FGRIX', 'FLPSX', 'FMAGX', 'FOSFX',
, 'FUSEX', '_GIC_')) ) end = eof;
MPRINT(QUAD):      retain _rhs_ , _vname_ '';
MPRINT(QUAD):      _type_ = 'QUAD';
MPRINT(QUAD):      CPO = CPO * 2 * 5000;
MPRINT(QUAD):      call vname(CPO, _vname);
MPRINT(QUAD):      if _name_ = _vname then CPO = CPO + 2 * 0.6;
MPRINT(QUAD):      FBNDX = FBNDX * 2 * 5000;
MPRINT(QUAD):      call vname(FBNDX, _vname);
MPRINT(QUAD):      if _name_ = _vname then FBNDX = FBNDX + 2 * 0.6;
MPRINT(QUAD):      FCNTX = FCNTX * 2 * 5000;
MPRINT(QUAD):      call vname(FCNTX, _vname);
MPRINT(QUAD):      if _name_ = _vname then FCNTX = FCNTX + 2 * 0.6;
MPRINT(QUAD):      FGRIX = FGRIX * 2 * 5000;
MPRINT(QUAD):      call vname(FGRIX, _vname);
MPRINT(QUAD):      if _name_ = _vname then FGRIX = FGRIX + 2 * 0.6;
MPRINT(QUAD):      FLPSX = FLPSX * 2 * 5000;
MPRINT(QUAD):      call vname(FLPSX, _vname);
MPRINT(QUAD):      if _name_ = _vname then FLPSX = FLPSX + 2 * 0.6;
MPRINT(QUAD):      FMAGX = FMAGX * 2 * 5000;
MPRINT(QUAD):      call vname(FMAGX, _vname);
MPRINT(QUAD):      if _name_ = _vname then FMAGX = FMAGX + 2 * 0.6;
MPRINT(QUAD):      FOSFX = FOSFX * 2 * 5000;
MPRINT(QUAD):      call vname(FOSFX, _vname);
MPRINT(QUAD):      if _name_ = _vname then FOSFX = FOSFX + 2 * 0.6;
MPRINT(QUAD):      FUSEX = FUSEX * 2 * 5000;
MPRINT(QUAD):      call vname(FUSEX, _vname);
MPRINT(QUAD):      if _name_ = _vname then FUSEX = FUSEX + 2 * 0.6;
MPRINT(QUAD):      _GIC_ = _GIC_ * 2 * 5000;
MPRINT(QUAD):      call vname(_GIC_, _vname);
MPRINT(QUAD):      if _name_ = _vname then _GIC_ = _GIC_ + 2 * 0.6;
MPRINT(QUAD):      output;
```

```

MPRINT(QUAD):      if eof then do;
MPRINT(QUAD):      CPO = 1;
MPRINT(QUAD):      FBNDX = 1;
MPRINT(QUAD):      FCNTX = 1;
MPRINT(QUAD):      FGRIX = 1;
MPRINT(QUAD):      FLP SX = 1;
MPRINT(QUAD):      FMAGX = 1;
MPRINT(QUAD):      FOSFX = 1;
MPRINT(QUAD):      FUSEX = 1;
MPRINT(QUAD):      _GIC_ = 1;
MPRINT(QUAD):      _type_ = 'eq';
MPRINT(QUAD):      _name_ = 'WGT';
MPRINT(QUAD):      _rhs_ = 1;
MPRINT(QUAD):      output;
MPRINT(QUAD):      end;
MPRINT(QUAD):      run;

```

NOTE: There were 9 observations read from the data set WORK.COVNAT.

WHERE (\_type\_='COV') and \_name\_ in ('CPO', 'FBNDX', 'FCNTX', 'FGRIX', 'FLPSX', 'FMAGX', 'FOSFX', 'FUSEX', '\_GIC\_');

NOTE: The data set PF.INQUAD has 10 observations and 12 variables.

NOTE: DATA statement used:

```

real time      0.05 seconds
cpu time       0.04 seconds

```

```

MPRINT(QUAD):      proc sql noprint;
MPRINT(QUAD):      create table _ql as select 'LINEAR' as _type_, as _rhs_, ticker, PVALUEM as _linear from _in_tv ;
NOTE: Table WORK._Q1 created, with 9 rows and 4 columns.

```

NOTE: PROCEDURE SQL used:

```

real time      0.01 seconds
cpu time       0.00 seconds

```

```

MPRINT(QUAD):      proc transpose data=_ql out=_ql;
MPRINT(QUAD):      var _linear;
MPRINT(QUAD):      id ticker;
MPRINT(QUAD):      by _type_ _rhs_ ;

```

NOTE: There were 9 observations read from the data set WORK.\_Q1.

NOTE: The data set WORK.\_Q1 has 1 observations and 12 variables.

NOTE: PROCEDURE TRANSPOSE used:

```

real time      0.03 seconds
cpu time       0.00 seconds

```

```

MPRINT(QUAD):      data pf.inquad;
MPRINT(QUAD):      set pf.inquad _ql;
MPRINT(QUAD):      run;

```

NOTE: There were 10 observations read from the data set PF.INQUAD.

NOTE: There were 1 observations read from the data set WORK.\_Q1.

NOTE: The data set PF.INQUAD has 11 observations and 12 variables.

NOTE: DATA statement used:

```

real time      0.02 seconds
cpu time       0.01 seconds

```

```

MPRINT(S2QCONST):  proc sort data=pf.sconst(keep = ticker maxwgt) out=_q3;
MPRINT(S2QCONST):  by ticker maxwgt;

```

NOTE: There were 4 observations read from the data set PF.SCONST.  
NOTE: The data set WORK.\_Q3 has 4 observations and 2 variables.

NOTE: PROCEDURE SORT used:

```

real time      0.02 seconds
cpu time       0.00 seconds

```

```

MPRINT(S2QCONST):  data _q3;
MPRINT(S2QCONST):  set _q3;
MPRINT(S2QCONST):  by ticker maxwgt;
MPRINT(S2QCONST):  if first.ticker;

```

NOTE: There were 4 observations read from the data set WORK.\_Q3.

NOTE: The data set WORK.\_Q3 has 4 observations and 2 variables.

NOTE: DATA statement used:

```

real time      0.01 seconds
cpu time       0.00 seconds

```

```

MPRINT(S2QCONST):  proc transpose data=_q3 out=_q4;

```

```

MPRINT(S2QCONST):  var maxwgt;

```

```

MPRINT(S2QCONST):  id ticker;

```

NOTE: There were 4 observations read from the data set WORK.\_Q3.

NOTE: The data set WORK.\_Q4 has 1 observations and 5 variables.

NOTE: PROCEDURE TRANSPOSE used:

```

real time      0.01 seconds
cpu time       0.00 seconds

```

```

MPRINT(S2QCONST):  data _q4;
MPRINT(S2QCONST):  format _type_ $8. _name_ $8.;
MPRINT(S2QCONST):  set _q4;
MPRINT(S2QCONST):  _type_ = 'upperbd';
MPRINT(S2QCONST):  _name_ = 'UPPER';
MPRINT(S2QCONST):  _rhs_ = .;
MPRINT(S2QCONST):  if CPO eq . then CPO = 1;
MPRINT(S2QCONST):  if FBNDX eq . then FBNDX = 1;
MPRINT(S2QCONST):  if FCNTX eq . then FCNTX = 1;
MPRINT(S2QCONST):  if FGRIX eq . then FGRIX = 1;
MPRINT(S2QCONST):  if FLPSX eq . then FLPSX = 1;
MPRINT(S2QCONST):  if FMAGX eq . then FMAGX = 1;
MPRINT(S2QCONST):  if FOSFX eq . then FOSFX = 1;
MPRINT(S2QCONST):  if FUSEX eq . then FUSEX = 1;
MPRINT(S2QCONST):  if _GIC_ eq . then _GIC_ = 1;
MPRINT(S2QCONST):  run;

```

NOTE: There were 1 observations read from the data set WORK.\_Q4.

NOTE: The data set WORK.\_Q4 has 1 observations and 14 variables.

NOTE: DATA statement used:

```

real time      0.02 seconds
cpu time       0.02 seconds

```

```

MPRINT(S2QCONST):  proc sort data=pf.sconst(keep = ticker minwgt) out=_q5;
MPRINT(S2QCONST):  by ticker descending minwgt;

```



NOTE: There were 4 observations read from the data set PF.SCONST.

NOTE: The data set WORK\_Q5 has 4 observations and 2 variables.

NOTE: PROCEDURE SORT used:

real time	0.02 seconds
cpu time	0.00 seconds

```
MPRINT(S2QCONST): data _q5;
```

```
MPRINT(S2QCONST): set _q5;
```

```
MPRINT(S2QCONST): by ticker descending minwgt;
```

```
MPRINT(S2QCONST): if first.ticker;
```

NOTE: There were 4 observations read from the data set WORK\_Q5.

NOTE: The data set WORK\_Q5 has 4 observations and 2 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.00 seconds

```
MPRINT(S2QCONST): proc transpose data=_q5 out=_q6;
```

```
MPRINT(S2QCONST): var minwgt;
```

```
MPRINT(S2QCONST): id ticker;
```

NOTE: There were 4 observations read from the data set WORK\_Q5.

NOTE: The data set WORK\_Q6 has 1 observations and 5 variables.

NOTE: PROCEDURE TRANSPOSE used:

real time	0.01 seconds
cpu time	0.00 seconds

```
MPRINT(S2QCONST): data _q6;
```

```
MPRINT(S2QCONST): format _type_ $8. _name_ $8.;
```

```
MPRINT(S2QCONST): set _q6;
```

```
MPRINT(S2QCONST): _type_ = 'lowerbd ';
```

```
MPRINT(S2QCONST): _name_ = 'LOWER';
```

```
MPRINT(S2QCONST): _RHS_ = .;
```

```
MPRINT(S2QCONST): if CPO eq . then CPO = 0;
```

```
MPRINT(S2QCONST): if FBNDX eq . then FBNDX = 0;
```

```
MPRINT(S2QCONST): if FCNTX eq . then FCNTX = 0;
```

```
MPRINT(S2QCONST): if FGRIX eq . then FGRIX = 0;
```

```
MPRINT(S2QCONST): if FLPSX eq . then FLPSX = 0;
```

```
MPRINT(S2QCONST): if FMAGX eq . then FMAGX = 0;
```

```
MPRINT(S2QCONST): if FOSFX eq . then FOSFX = 0;
```

```
MPRINT(S2QCONST): if FUSEX eq . then FUSEX = 0;
```

```
MPRINT(S2QCONST): if _GIC_ eq . then _GIC_ = 0;
```

```
MPRINT(S2QCONST): run;
```

NOTE: There were 1 observations read from the data set WORK\_Q6.

NOTE: The data set WORK\_Q6 has 1 observations and 14 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.02 seconds

```
MPRINT(S2QCONST): data tsconst(keep =
```

```
MPRINT(S2QCONST): set _q4 _q6;
```

```
MPRINT(S2QCONST): run;
```

```
MPRINT(S2QCONST): data tsconst(keep = _type_ _name_ _rhs_ CPO FBNDX FCNTX FGRIX FLPSX FMAGX FOSFX FUSEX _GIC_);
```

NOTE: There were 1 observations read from the data set WORK.\_Q4.  
 NOTE: There were 1 observations read from the data set WORK.\_Q6.  
 NOTE: The data set WORK.TSCONST has 2 observations and 12 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.01 seconds

```
MPRINT(TRASH):  proc datasets nolist lib=work;
MPRINT(TRASH):  delete _q3 _q4 _q5 _q6;
MPRINT(TRASH):  run;
```

NOTE: Deleting WORK.\_Q3 (memptype=DATA).

NOTE: Deleting WORK.\_Q4 (memptype=DATA).

NOTE: Deleting WORK.\_Q5 (memptype=DATA).

NOTE: Deleting WORK.\_Q6 (memptype=DATA).

MPRINT(S2QCONST): ;

MPRINT(QUAD): ;

NOTE: PROCEDURE DATASETS used:

real time	0.04 seconds
cpu time	0.02 seconds

```
MPRINT(QUAD):  proc append base=pf.inquad data=tscnst force;
MPRINT(QUAD):  run;
```

NOTE: Appending WORK.TSCONST to PF.INQUAD.

NOTE: There were 2 observations read from the data set WORK.TSCONST.

NOTE: 2 observations added.

NOTE: The data set PF.INQUAD has 13 observations and 12 variables.

NOTE: PROCEDURE APPEND used:

real time	0.01 seconds
cpu time	0.01 seconds

```
MPRINT(QUAD):  proc transpose data=_initval out=_q1;
MPRINT(QUAD):  var wgt;
MPRINT(QUAD):  id ticker;
MPRINT(QUAD):  run;
```

NOTE: There were 9 observations read from the data set WORK.\_INITVAL.

NOTE: The data set WORK.\_Q1 has 1 observations and 10 variables.

NOTE: PROCEDURE TRANSPOSE used:

real time	0.01 seconds
cpu time	0.00 seconds

```
MPRINT(QUAD):  data _q1;
MPRINT(QUAD):  format _name_ $8.;
MPRINT(QUAD):  set _q1;
MPRINT(QUAD):  _type_ = 'PARMS ' ;
MPRINT(QUAD):  _rhs_ = .;
```

NOTE: There were 1 observations read from the data set WORK.\_Q1.

NOTE: The data set WORK.\_Q1 has 1 observations and 12 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.01 seconds

```
MPRINT(QUAD):  proc append base=pf.inquad data=_q1 force;
MPRINT(QUAD):  run;
```

```
NOTE: Appending WORK._Q1 to PF.INQUAD.
NOTE: There were 1 observations read from the data set WORK._Q1.
NOTE: 1 observations added.
NOTE: The data set PF.INQUAD has 14 observations and 12 variables.
NOTE: PROCEDURE APPEND used:
      real time      0.01 seconds
      cpu time       0.01 seconds
```

```
MPRINT(T2QCONST):  proc sql noprint;
MPRINT(T2QCONST):  select count(*) into :cnt from pf.adjconst;
NOTE: PROCEDURE SQL used:
      real time      0.00 seconds
      cpu time       0.00 seconds
```

```
MPRINT(T2QCONST):  proc sql noprint;
MPRINT(T2QCONST):  select var, minwgt,maxwgt into :vname1 - :vname6, :minwgt1 - :minwgt6, :maxwgt1 - :maxwgt6 from pf.adjconst;
NOTE: PROCEDURE SQL used:
      real time      0.00 seconds
      cpu time       0.01 seconds
```

```
MPRINT(T2QCONST):  data _q7;
MPRINT(T2QCONST):  format _name_ $8. ticker $8. wgt 15.8 _type_ $8. _rhs_ 15.8;
MPRINT(T2QCONST):  if l=2;
MPRINT(T2QCONST):  _name_='';
MPRINT(T2QCONST):  ticker='';
MPRINT(T2QCONST):  wgt=. ;
MPRINT(T2QCONST):  _type_='';
MPRINT(T2QCONST):  _rhs_='';
MPRINT(T2QCONST):  run;
```

```
NOTE: The data set WORK._Q7 has 0 observations and 5 variables.
NOTE: DATA statement used:
      real time      0.01 seconds
      cpu time       0.01 seconds
```

```
MPRINT(T2QCONST):  data _q7;
MPRINT(T2QCONST):  set _q7 _in_tv(in=inb keep=ticker BONDS rename=(BONDS=wgt ));
MPRINT(T2QCONST):  if inb then do;
MPRINT(T2QCONST):  _name_ = "BONDS";
MPRINT(T2QCONST):  _type_ = 'ge';
MPRINT(T2QCONST):  _rhs_ = 0.01647;
MPRINT(T2QCONST):  end;
MPRINT(T2QCONST):  run;
```

```
NOTE: There were 0 observations read from the data set WORK._Q7.
NOTE: There were 9 observations read from the data set WORK._IN_TV.
NOTE: The data set WORK._Q7 has 9 observations and 5 variables.
NOTE: DATA statement used:
      real time      0.02 seconds
```

cpu time 0.02 seconds

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7 _in_tv(in=inb keep=ticker BONDS rename=(BONDS=wtg));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST): _name_ = "BONDS";
MPRINT(T2QCONST): _type_ = 'le';
MPRINT(T2QCONST): _rhs_ = 0.21647;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 9 observations read from the data set WORK.\_Q7.  
 NOTE: There were 9 observations read from the data set WORK.\_IN\_TV.  
 NOTE: The data set WORK.\_Q7 has 18 observations and 5 variables.  
 NOTE: DATA statement used:

real time 0.02 seconds  
 cpu time 0.02 seconds

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7 _in_tv(in=inb keep=ticker CASH rename=(CASH=wtg));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST): _name_ = "CASH";
MPRINT(T2QCONST): _type_ = 'ge';
MPRINT(T2QCONST): _rhs_ = -0.0735;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 18 observations read from the data set WORK.\_Q7.  
 NOTE: There were 9 observations read from the data set WORK.\_IN\_TV.  
 NOTE: The data set WORK.\_Q7 has 27 observations and 5 variables.  
 NOTE: DATA statement used:

real time 0.02 seconds  
 cpu time 0.01 seconds

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7 _in_tv(in=inb keep=ticker CASH rename=(CASH=wtg));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST): _name_ = "CASH";
MPRINT(T2QCONST): _type_ = 'le';
MPRINT(T2QCONST): _rhs_ = 0.126496;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 27 observations read from the data set WORK.\_Q7.  
 NOTE: There were 9 observations read from the data set WORK.\_IN\_TV.  
 NOTE: The data set WORK.\_Q7 has 36 observations and 5 variables.  
 NOTE: DATA statement used:

real time 0.02 seconds  
 cpu time 0.01 seconds

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7 _in_tv(in=inb keep=ticker FSTOCKS rename=(FSTOCKS=wtg));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST): _name_ = "FSTOCKS";

```

```

MPRINT(T2QCONST):  _type_ = 'ge';
MPRINT(T2QCONST):  _rhs_ = -0.05657;
MPRINT(T2QCONST):  end;
MPRINT(T2QCONST):  run;

```

NOTE: There were 36 observations read from the data set WORK.\_Q7.  
 NOTE: There were 9 observations read from the data set WORK.\_IN\_TV.  
 NOTE: The data set WORK.\_Q7 has 45 observations and 5 variables.

NOTE: DATA statement used:

```

      real time      0.02 seconds
      cpu time       0.01 seconds

```

```

MPRINT(T2QCONST):  data _q7;
MPRINT(T2QCONST):  set _q7 _in_tv(in=inb keep=ticker FSTOCKS rename=(FSTOCKS=wgt));
MPRINT(T2QCONST):  if inb then do;
MPRINT(T2QCONST):  _name_ = "FSTOCKS";
MPRINT(T2QCONST):  _type_ = 'le';
MPRINT(T2QCONST):  _rhs_ = 0.103428;
MPRINT(T2QCONST):  end;
MPRINT(T2QCONST):  run;

```

NOTE: There were 45 observations read from the data set WORK.\_Q7.  
 NOTE: There were 9 observations read from the data set WORK.\_IN\_TV.  
 NOTE: The data set WORK.\_Q7 has 54 observations and 5 variables.

NOTE: DATA statement used:

```

      real time      0.02 seconds
      cpu time       0.01 seconds

```

```

MPRINT(T2QCONST):  data _q7;
MPRINT(T2QCONST):  set _q7 _in_tv(in=inb keep=ticker HYBONDS rename=(HYBONDS=wgt ));
MPRINT(T2QCONST):  if inb then do;
MPRINT(T2QCONST):  _name_ = "HYBONDS";
MPRINT(T2QCONST):  _type_ = 'ge';
MPRINT(T2QCONST):  _rhs_ = -0.1;
MPRINT(T2QCONST):  end;
MPRINT(T2QCONST):  run;

```

NOTE: There were 54 observations read from the data set WORK.\_Q7.  
 NOTE: There were 9 observations read from the data set WORK.\_IN\_TV.  
 NOTE: The data set WORK.\_Q7 has 63 observations and 5 variables.

NOTE: DATA statement used:

```

      real time      0.02 seconds
      cpu time       0.01 seconds

```

```

MPRINT(T2QCONST):  data _q7;
MPRINT(T2QCONST):  set _q7 _in_tv(in=inb keep=ticker HYBONDS rename=(HYBONDS=wgt));
MPRINT(T2QCONST):  if inb then do;
MPRINT(T2QCONST):  _name_ = "HYBONDS";
MPRINT(T2QCONST):  _type_ = 'le';
MPRINT(T2QCONST):  _rhs_ = 0.1;
MPRINT(T2QCONST):  end;
MPRINT(T2QCONST):  run;

```

NOTE: There were 63 observations read from the data set WORK.\_Q7.  
 NOTE: There were 9 observations read from the data set WORK.\_IN\_TV.

NOTE: The data set WORK\_Q7 has 72 observations and 5 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.02 seconds

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7 _in_tv(in=inb keep=ticker OTHER rename=(OTHER=wtg ));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "OTHER";
MPRINT(T2QCONST):   _type_ = 'ge';
MPRINT(T2QCONST):   _rhs_ = -0.1;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 72 observations read from the data set WORK\_Q7.

NOTE: There were 9 observations read from the data set WORK\_IN\_TV.

NOTE: The data set WORK\_Q7 has 81 observations and 5 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.02 seconds

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7 _in_tv(in=inb keep=ticker OTHER rename=(OTHER=wtg ));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "OTHER";
MPRINT(T2QCONST):   _type_ = 'le';
MPRINT(T2QCONST):   _rhs_ = 0.1;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 81 observations read from the data set WORK\_Q7.

NOTE: There were 9 observations read from the data set WORK\_IN\_TV.

NOTE: The data set WORK\_Q7 has 90 observations and 5 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.01 seconds

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7 _in_tv(in=inb keep=ticker STOCKS rename=(STOCKS=wtg ));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "STOCKS";
MPRINT(T2QCONST):   _type_ = 'ge';
MPRINT(T2QCONST):   _rhs_ = 0.847033;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 90 observations read from the data set WORK\_Q7.

NOTE: There were 9 observations read from the data set WORK\_IN\_TV.

NOTE: The data set WORK\_Q7 has 99 observations and 5 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.01 seconds

```
MPRINT(T2QCONST): data _q7;
```

```

MPRINT(T2QCONST): set _q7_in_tv(in=inb keep=ticker STOCKS rename=(STOCKS=wgt));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "STOCKS";
MPRINT(T2QCONST):   _type_ = 'le';
MPRINT(T2QCONST):   _rhs_ = 0.867033;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 99 observations read from the data set WORK.\_Q7.  
 NOTE: There were 9 observations read from the data set WORK.IN\_TV.  
 NOTE: The data set WORK.\_Q7 has 108 observations and 5 variables.  
 NOTE: DATA statement used:  
     real time          0.01 seconds  
     cpu time          0.01 seconds

```

MPRINT(T2QCONST): proc sort data=_q7;
MPRINT(T2QCONST):   by _name_ _type_ _rhs_;
MPRINT(T2QCONST): run;

```

NOTE: There were 108 observations read from the data set WORK.\_Q7.  
 NOTE: The data set WORK.\_Q7 has 108 observations and 5 variables.  
 NOTE: PROCEDURE SORT used:  
     real time          0.01 seconds  
     cpu time          0.01 seconds

```

MPRINT(T2QCONST): proc transpose data=_q7 out=tttconst(drop=_label_);
MPRINT(T2QCONST):   by _name_ _type_ _rhs_;
MPRINT(T2QCONST):   id ticker;
MPRINT(T2QCONST):   var wgt;
MPRINT(T2QCONST): run;

```

NOTE: There were 108 observations read from the data set WORK.\_Q7.  
 NOTE: The data set WORK.TTCONST has 12 observations and 12 variables.  
 NOTE: PROCEDURE TRANSPOSE used:  
     real time          0.02 seconds  
     cpu time          0.01 seconds

```

MPRINT(TRASH): proc datasets nolist lib=work;
MPRINT(TRASH): delete _q7;
MPRINT(TRASH): run;

```

```

NOTE: Deleting WORK._Q7 (memtype=DATA).
MPRINT(T2QCONST): ;
MPRINT(QUAD): ;
NOTE: PROCEDURE DATASETS used:  

      real time          0.01 seconds  

      cpu time          0.01 seconds

```

```

MPRINT(QUAD): proc append base=pf.inquad data=tttconst force;
MPRINT(QUAD): run;

```

NOTE: Appending WORK.TTCONST to PF.INQUAD.  
 NOTE: There were 12 observations read from the data set WORK.TTCONST.  
 NOTE: 12 observations added.

NOTE: The data set PF.INQUAD has 26 observations and 12 variables.

NOTE: PROCEDURE APPEND used:

real time	0.01 seconds
cpu time	0.00 seconds

```

MPRINT(CALLNLP):  proc nlp inquad=pf.inquad outest=pf.outquad cov=2 ;
MPRINT(CALLNLP):  min;
MPRINT(CALLNLP):  parms CPO FBNDX FCNTX FGRIX FLPSX FMAGX FOSFX FUSEX _GIC_ ;
MPRINT(CALLNLP):  run;

```

NOTE: Your code contains 0 program statements.

NOTE: Analytic derivatives are used with a quadratic optimization problem.

WARNING: A total of 1 identical linear constraints are deleted.

NOTE: Initial value of parameter CPO is set randomly to 0.4825134098.

NOTE: Initial value of parameter FBNDX is set randomly to 0.781773595.

NOTE: Initial value of parameter FCNTX is set randomly to 0.5300982159.

NOTE: Initial value of parameter FGRIX is set randomly to 0.5869857937.

NOTE: Initial value of parameter FLPSX is set randomly to 0.3789469704.

NOTE: Initial value of parameter FMAGX is set randomly to 0.0491516348.

NOTE: Initial value of parameter FOSFX is set randomly to 0.5774327547.

NOTE: Initial value of parameter FUSEX is set randomly to 0.1838599677.

NOTE: Initial value of parameter \_GIC\_ is set randomly to 0.898012612.

NOTE: Initial point was changed to be feasible for boundary and linear constraints.

NOTE: ABSGCONV convergence criterion satisfied.

NOTE: There were 26 observations read from the data set PF.INQUAD.

NOTE: The data set PF.OUTQUAD has 63 observations and 14 variables.

NOTE: The PROCEDURE NLP printed pages 6-9.

NOTE: PROCEDURE NLP used:

real time	0.13 seconds
cpu time	0.06 seconds

```

MPRINT(CALLNLP):  proc sql noprint;
MPRINT(CALLNLP):  select _rhs_ into :objfnval from pf.outquad where _type_ = 'PARMS';
MPRINT(QUAD):  ;

```

NOTE: PROCEDURE SQL used:

real time	0.00 seconds
cpu time	0.01 seconds

```

MPRINT(TRASH):  proc datasets nolist lib=work;
MPRINT(TRASH):  delete _q1 _q2;
MPRINT(TRASH):  run;

```

NOTE: The file WORK.\_Q2 (memtype=DATA) was not found, but appears on a DELETE statement.

NOTE: Deleting WORK.\_Q1 (memtype=DATA).

MPRINT(QUAD): ;

MPRINT(OPTO\_CTW): ;

NOTE: PROCEDURE DATASETS used:

real time	0.02 seconds
cpu time	0.02 seconds

MPRINT(Q2CTW): proc sql;

MPRINT(Q2CTW): select \_rhs\_ into :objfnval from pf.outquad where \_type\_ = 'PARMS';

NOTE: The PROCEDURE SQL printed page 10.



NOTE: PROCEDURE SQL used:

real time	0.00 seconds
cpu time	0.01 seconds

```

MPRINT(Q2CTW): data _out_ctw(drop=_type_ _rhs_);
MPRINT(Q2CTW): format cticker $8.;
MPRINT(Q2CTW): set pf.outquad(drop=_name_ _iter_ _tech_ where=( _type_='PARMS'));
MPRINT(Q2CTW): cticker = "PF000021";
MPRINT(Q2CTW): call symput("OBJFNVAL",put(_rhs_,best.));
MPRINT(Q2CTW): if _rhs_ ne . then do;
MPRINT(Q2CTW): output;
MPRINT(Q2CTW): call symput("OSTATUS","0");
MPRINT(Q2CTW): end;
MPRINT(Q2CTW): else do;
MPRINT(Q2CTW): call symput("OSTATUS","1");
MPRINT(Q2CTW): end;
MPRINT(Q2CTW): run;

```

NOTE: There were 1 observations read from the data set PF.OUTQUAD.

WHERE \_type\_='PARMS';

NOTE: The data set WORK\_OUT\_CTW has 1 observations and 10 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.01 seconds

```

MPRINT(Q2CTW): proc transpose data=_out_ctw out=_out_ctw(rename=( _name_=ticker coll=wgt));
MPRINT(Q2CTW): by cticker;
MPRINT(Q2CTW): run;

```

NOTE: There were 1 observations read from the data set WORK\_OUT\_CTW.

NOTE: The data set WORK\_OUT\_CTW has 9 observations and 3 variables.

NOTE: PROCEDURE TRANSPOSE used:

real time	0.01 seconds
cpu time	0.00 seconds

```

MPRINT(OPTO_CTW): ;
MPRINT(OPTO_CTW): data pf.ctw;
MPRINT(OPTO_CTW): length cticker ticker $8;
MPRINT(OPTO_CTW): set _out_ctw;
MPRINT(OPTO_CTW): run;

```

NOTE: There were 9 observations read from the data set WORK\_OUT\_CTW.

NOTE: The data set PF.CTW has 9 observations and 3 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.02 seconds

```

MPRINT(OPTO_PF): ;
MPRINT(OPTO_PF): proc sql;
MPRINT(OPTO_PF): select min(wgt) into :mwgt from pf.ctw where wgt >0;
NOTE: The PROCEDURE SQL printed page 11.
NOTE: PROCEDURE SQL used:
real time      0.00 seconds
cpu time       0.00 seconds

```

```

MPRINT(OPTO_PF): proc sql;
MPRINT(OPTO_PF): create table initds as select a.*,b.atype,c.wgt as wgt0 from pf.initds a, product.asset_tv b, pf.ctw c where
a.ticker = b.ticker and a.ticker = c.ticker order by c.wgt desc, b.pvalue;
NOTE: The query as specified involves ordering by an item that doesn't appear in its SELECT clause.
NOTE: Table WORK.INITDS created, with 9 rows and 6 columns.

```

```

NOTE: PROCEDURE SQL used:
      real time      0.04 seconds
      cpu time       0.03 seconds

```

```

MPRINT(OPTO_PF): data initds(keep=cticker ticker wgt);
MPRINT(OPTO_PF): set initds;
MPRINT(OPTO_PF): retain count 0;
MPRINT(OPTO_PF): retain fcount 0;
MPRINT(OPTO_PF): if atype = 'EQUITY' then do;
MPRINT(OPTO_PF): count = count + 1;
MPRINT(OPTO_PF): if count <= 6 then output;
MPRINT(OPTO_PF): end;
MPRINT(OPTO_PF): else if atype = 'FOREIGN' then do;
MPRINT(OPTO_PF): fcount = fcount + 1;
MPRINT(OPTO_PF): if fcount <= 2 then output;
MPRINT(OPTO_PF): end;
MPRINT(OPTO_PF): else output;
MPRINT(OPTO_PF): run;

```

```

NOTE: There were 9 observations read from the data set WORK.INITDS.
NOTE: The data set WORK.INITDS has 9 observations and 3 variables.

```

```

NOTE: DATA statement used:
      real time      0.02 seconds
      cpu time       0.02 seconds

```

```

MPRINT(DS2MA): proc sql noprint;
MPRINT(DS2MA): select count(distinct ticker) into :_mz0 from initds where ticker ne '' ;
NOTE: PROCEDURE SQL used:
      real time      0.02 seconds
      cpu time       0.01 seconds

```

```

MPRINT(DS2MA): proc sql noprint;
MPRINT(DS2MA): select distinct ticker into :_mz1 - :_mz9 from initds where ticker ne '' order by ticker;
MPRINT(DS2L): ;
MPRINT(OPTO_PF): reduced universe = CPO FBNDX FCNTX FGRIX FLPSX FMAGX FOSFX FUSEX _GIC_
NOTE: PROCEDURE SQL used:
      real time      0.01 seconds
      cpu time       0.01 seconds

```

```

MPRINT(DS2MA): proc sql noprint;
MPRINT(DS2MA): select count(distinct ticker) into :_ma0 from initds where ticker ne '' ;
NOTE: PROCEDURE SQL used:
      real time      0.01 seconds
      cpu time       0.00 seconds

```

```

MPRINT(DS2MA):      proc sql noprint;
MPRINT(DS2MA):      select distinct ticker into :_ma1 - :_ma9 from initds where ticker ne '' order by ticker;
MPRINT(OPTO_CTW):    ;
NOTE: PROCEDURE SQL used:
      real time      0.00 seconds
      cpu time       0.01 seconds

```

```

MPRINT(DS2MA):      proc sql noprint;
MPRINT(DS2MA):      select count(distinct cticker) into :_p0 from initds where cticker ne '' ;
NOTE: PROCEDURE SQL used:
      real time      0.01 seconds
      cpu time       0.00 seconds

```

```

MPRINT(DS2MA):      proc sql noprint;
MPRINT(DS2MA):      select distinct cticker into :_p1 - :_p1 from initds where cticker ne '' order by cticker;
MPRINT(OPTO_CTW):    ;
NOTE: PROCEDURE SQL used:
      real time      0.00 seconds
      cpu time       0.00 seconds

```

```

MPRINT(OPTO_CTW):    proc sql noprint;
MPRINT(OPTO_CTW):    create table _ticks as select distinct ticker from initds;
NOTE: Table WORK._TICKS created, with 9 rows and 1 columns.

```

```

MPRINT(OPTO_CTW):    insert into _ticks(ticker) values ("_BENCH");
NOTE: 1 row was inserted into WORK._TICKS.

```

```

NOTE: PROCEDURE SQL used:
      real time      0.02 seconds
      cpu time       0.02 seconds

```

```

MPRINT(OPTO_CTW):    proc sort data=_ticks;
MPRINT(OPTO_CTW):    by ticker;
MPRINT(OPTO_CTW):    run;

```

```

NOTE: There were 10 observations read from the data set WORK._TICKS.
NOTE: The data set WORK._TICKS has 10 observations and 1 variables.
NOTE: PROCEDURE SORT used:
      real time      0.01 seconds
      cpu time       0.02 seconds

```

```

MPRINT(CLEANRET):    proc sql;
MPRINT(CLEANRET):    create table _rc2 as select distinct ticker from _ticks;
NOTE: Table WORK._RC2 created, with 10 rows and 1 columns.

```

```

NOTE: PROCEDURE SQL used:
      real time      0.01 seconds
      cpu time       0.01 seconds

```

```

MPRINT(CLEANRET):    data _rc2;
MPRINT(CLEANRET):    set _rc2 end=eof;

```

```

MPRINT(CLEANRET): if _n_ eq 1 then call symput("_CRA",ticker);
MPRINT(CLEANRET): if eof then call symput("_CRZ",ticker);
MPRINT(CLEANRET): return = 0;
MPRINT(CLEANRET): run;

```

NOTE: There were 10 observations read from the data set WORK\_RC2.

NOTE: The data set WORK\_RC2 has 10 observations and 2 variables.

NOTE: DATA statement used:

```

real time      0.01 seconds
cpu time       0.00 seconds

```

```

MPRINT(L2WTRAN):  proc transpose data=_rc2(keep=return ticker ) out=_rc2(keep=_numeric_);
MPRINT(L2WTRAN):  var return;
MPRINT(L2WTRAN):  id ticker;
MPRINT(L2WTRAN):  ;
MPRINT(L2WTRAN):  run;

```

NOTE: There were 10 observations read from the data set WORK\_RC2.

NOTE: The data set WORK\_RC2 has 1 observations and 10 variables.

NOTE: PROCEDURE TRANSPOSE used:

```

real time      0.01 seconds
cpu time       0.02 seconds

```

```

MPRINT(CLEANRET): ;
MPRINT(CLEANRET): data _dt2(keep=date CPO -- _GIC_ );
MPRINT(CLEANRET): merge _rc2 pf.mdl_dtt;
MPRINT(CLEANRET): array _x CPO -- _GIC_ ;
MPRINT(CLEANRET): do over _x;
MPRINT(CLEANRET): if _x = . then _x = 0;
MPRINT(CLEANRET): end;
MPRINT(CLEANRET): output;
MPRINT(CLEANRET): run;

```

NOTE: There were 1 observations read from the data set WORK\_RC2.

NOTE: There were 36 observations read from the data set PF.MDL\_DTT.

NOTE: The data set WORK\_DTT2 has 36 observations and 11 variables.

NOTE: DATA statement used:

```

real time      0.02 seconds
cpu time       0.02 seconds

```

```

MPRINT(TRASH):    proc datasets nolist lib=work;
MPRINT(TRASH):    delete _rc2;
MPRINT(TRASH):    run;

```

NOTE: Deleting WORK\_RC2 (memtype=DATA).

```
MPRINT(CLEANRET): ;
```

```
MPRINT(OPTO_CTW): ;
```

NOTE: PROCEDURE DATASETS used:

```

real time      0.02 seconds
cpu time       0.00 seconds

```

```

MPRINT(OPTO_CTW): data _dt1(drop=_name);
MPRINT(OPTO_CTW): set _dt2;

```

```

MPRINT(OPTO_CTW):      format _name $8.;
MPRINT(OPTO_CTW):      array _x _numeric_;
MPRINT(OPTO_CTW):      do over _x;
MPRINT(OPTO_CTW):      call vname(_x,_name);
MPRINT(OPTO_CTW):      if _name ne "_BENCH" and _name ne "DATE" then _x = _x - _BENCH;
MPRINT(OPTO_CTW):      end;

```

NOTE: There were 36 observations read from the data set WORK\_DTT2.

NOTE: The data set WORK\_DTT1 has 36 observations and 11 variables.

NOTE: DATA statement used:

```

real time      0.01 seconds
cpu time       0.02 seconds

```

```

MPRINT(OPTO_CTW):      proc corr cov data=_dt1 outp=_covmat nosimple noprint;
MPRINT(OPTO_CTW):      var CPO FBNDX FCNTX FGRIX FLPSX FMAGX FOSFX FUSEX _GIC_;
MPRINT(OPTO_CTW):      run;

```

NOTE: The data set WORK\_COVMAT has 21 observations and 11 variables.

NOTE: PROCEDURE CORR used:

```

real time      0.01 seconds
cpu time       0.02 seconds

```

```

MPRINT(DSV2MA):      proc contents data=initds(drop = wgt cticker ticker) out=_m1(keep=name varnum ) short noprint;
MPRINT(DSV2MA):      run;

```

NOTE: The data set WORK\_M1 has 0 observations and 2 variables.

NOTE: PROCEDURE CONTENTS used:

```

real time      0.02 seconds
cpu time       0.01 seconds

```

```

MPRINT(DS2MA):      proc sql noprint;
MPRINT(DS2MA):      select count(distinct name) into :_oth0 from _m1 where name ne '' ;
MPRINT(DSV2MA):      ;

```

NOTE: PROCEDURE SQL used:

```

real time      0.01 seconds
cpu time       0.00 seconds

```

```

MPRINT(TRASH):      proc datasets nolist lib=work;
MPRINT(TRASH):      delete _m1;
MPRINT(TRASH):      run;

```

NOTE: Deleting WORK\_M1 (mentype=DATA).

```

MPRINT(DSV2MA):      ;
MPRINT(DSV2MA):      ;
MPRINT(KKVNORM):      ;
MPRINT(KKVNORM):      ;

```

NOTE: PROCEDURE DATASETS used:

```

real time      0.02 seconds
cpu time       0.02 seconds

```

```

MPRINT(KKVNORM):      proc sql;

```

```

MPRINT(KKVNORM):      create table _kk3 as select cticker ,sum(wgt) as wgt from initds group by cticker;

```

NOTE: Table WORK\_KK3 created, with 1 rows and 2 columns.

NOTE: PROCEDURE SQL used:

real time	0.01 seconds
cpu time	0.01 seconds

```

MPRINT(KKVNORM):  proc sql;
                   create table _ctw as select a.cticker, a.ticker , a.wgt/s.wgt as wgt from _kk3 s, initds a where s.cticker =
                   a.cticker order by a.cticker, a.ticker;
NOTE: Table WORK._CTW created, with 9 rows and 3 columns.

```

NOTE: PROCEDURE SQL used:

real time	0.03 seconds
cpu time	0.02 seconds

```

MPRINT(TRASH):  proc datasets nolist lib=work;
MPRINT(TRASH):  delete _kk3;
MPRINT(TRASH):  run;

```

NOTE: Deleting WORK.\_KK3 (memtype=DATA).

```

MPRINT(KKVNORM):  ;
MPRINT(CTVNORM):  ;
MPRINT(OPTO_CTW):  ;

```

Optimizing 1 / 1 : PF000021 lambda=5000 kappa=0.6 linear=PVALUEM minval=0.05

NOTE: PROCEDURE DATASETS used:

real time	0.02 seconds
cpu time	0.01 seconds

```

MPRINT(OPTO_CTW):  data _initval(keep=ticker wgt);
MPRINT(OPTO_CTW):  set _ctw(where=(cticker = "PF000021"));
MPRINT(OPTO_CTW):  run;

```

NOTE: There were 9 observations read from the data set WORK.\_CTW.

```

WHERE cticker='PF000021';

```

NOTE: The data set WORK.\_INITVAL has 9 observations and 2 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.00 seconds

```

MPRINT(OPTO_CTW):  proc sort data=_initval;
MPRINT(OPTO_CTW):  by ticker;
MPRINT(OPTO_CTW):  run;

```

NOTE: There were 9 observations read from the data set WORK.\_INITVAL.

NOTE: The data set WORK.\_INITVAL has 9 observations and 2 variables.

NOTE: PROCEDURE SORT used:

real time	0.01 seconds
cpu time	0.01 seconds

```

MPRINT(OPTO_CTW):  data _in_tv;
MPRINT(OPTO_CTW):  merge _initval(keep=ticker in=ina) product.asset_tv;
MPRINT(OPTO_CTW):  by ticker;
MPRINT(OPTO_CTW):  if ina;
MPRINT(OPTO_CTW):  run;

```

NOTE: There were 9 observations read from the data set WORK.\_INITVAL.  
 NOTE: There were 968 observations read from the data set PRODUCT.ASSET\_TV.  
 NOTE: The data set WORK.\_IN\_TV has 9 observations and 26 variables.

NOTE: DATA statement used:  
     real time    0.03 seconds  
     cpu time     0.03 seconds

```
MPRINT(INITSTK):  proc sql noprint;
MPRINT(INITSTK):  create table stack (pos num, ticker char(8), lower num, upper num, prev num);
NOTE: Table WORK.STACK created, with 0 rows and 5 columns.
MPRINT(INITSTK):  create table stacko (pos num, ticker char(8), objval num, cur num, prev num, opt num, dist2min num);
NOTE: Table WORK.STACKO created, with 0 rows and 7 columns.
MPRINT(DISCOPT): ;
NOTE: PROCEDURE SQL used:
      real time    0.03 seconds
      cpu time     0.01 seconds
```

```
MPRINT(DS2MA):  proc sql noprint;
MPRINT(DS2MA):  select count(distinct ticker) into :qt0 from _in_tv where ticker ne '' ;
NOTE: PROCEDURE SQL used:
      real time    0.01 seconds
      cpu time     0.01 seconds
```

```
MPRINT(DS2MA):  proc sql noprint;
MPRINT(DS2MA):  select distinct ticker into :qt1 - :qt9 from _in_tv where ticker ne '' order by ticker;
MPRINT(DISCOPT): ;
NOTE: PROCEDURE SQL used:
      real time    0.01 seconds
      cpu time     0.01 seconds
```

```
MPRINT(DS2MA):  proc sql noprint;
MPRINT(DS2MA):  select count(distinct ticker) into :a10 from _in_tv where ticker ne '' ;
NOTE: PROCEDURE SQL used:
      real time    0.01 seconds
      cpu time     0.01 seconds
```

```
MPRINT(DS2MA):  proc sql noprint;
MPRINT(DS2MA):  select distinct ticker into :all - :a19 from _in_tv where ticker ne '' order by ticker;
MPRINT(QUAD): ;
NOTE: PROCEDURE SQL used:
      real time    0.00 seconds
      cpu time     0.01 seconds
```

```
MPRINT(QUAD):  data pf.inquad(keep = _type_ _name_ CPO FBNDX FCNTX FGRIX FLPX FMAGX FOSFX FUSEX _GIC_ _rhs_);
MPRINT(QUAD):  format _type_ $8. _name_ $8. _vname $8.;
MPRINT(QUAD):  set _covmat(where={_type_ = 'COV' and _name_ in ('CPO', 'FBNDX', 'FCNTX', 'FGRIX', 'FLPSX', 'FMAGX', 'FOSFX',
'FUSEX', '_GIC_')}) end = eof;
MPRINT(QUAD):  retain _rhs_ _vname '';
MPRINT(QUAD):  _type_ = 'QUAD';
MPRINT(QUAD):  CPO = CPO * 2 * 5000;
MPRINT(QUAD):  call vname(CPO, _vname);
```

```

MPRINT(QUAD): if _name_ = _vname then CPO = CPO + 2 * 0.6;
MPRINT(QUAD): FBNDX = FBNDX + 2 * 5000;
MPRINT(QUAD): call vname(FBNDX,_vname);
MPRINT(QUAD): if _name_ = _vname then FBNDX = FBNDX + 2 * 0.6;
MPRINT(QUAD): FCNTX = FCNTX + 2 * 5000;
MPRINT(QUAD): call vname(FCNTX,_vname);
MPRINT(QUAD): if _name_ = _vname then FCNTX = FCNTX + 2 * 0.6;
MPRINT(QUAD): FGRIX = FGRIX + 2 * 5000;
MPRINT(QUAD): call vname(FGRIX,_vname);
MPRINT(QUAD): if _name_ = _vname then FGRIX = FGRIX + 2 * 0.6;
MPRINT(QUAD): FLPSX = FLPSX + 2 * 5000;
MPRINT(QUAD): call vname(FLPSX,_vname);
MPRINT(QUAD): if _name_ = _vname then FLPSX = FLPSX + 2 * 0.6;
MPRINT(QUAD): FMAGX = FMAGX + 2 * 5000;
MPRINT(QUAD): call vname(FMAGX,_vname);
MPRINT(QUAD): if _name_ = _vname then FMAGX = FMAGX + 2 * 0.6;
MPRINT(QUAD): FOSFX = FOSFX + 2 * 5000;
MPRINT(QUAD): call vname(FOSFX,_vname);
MPRINT(QUAD): if _name_ = _vname then FOSFX = FOSFX + 2 * 0.6;
MPRINT(QUAD): FUSEX = FUSEX + 2 * 5000;
MPRINT(QUAD): call vname(FUSEX,_vname);
MPRINT(QUAD): if _name_ = _vname then FUSEX = FUSEX + 2 * 0.6;
MPRINT(QUAD): _GIC_ = _GIC_ + 2 * 5000;
MPRINT(QUAD): call vname(_GIC_,_vname);
MPRINT(QUAD): if _name_ = _vname then _GIC_ = _GIC_ + 2 * 0.6;
MPRINT(QUAD): output;
MPRINT(QUAD): if eof then do;
MPRINT(QUAD): CPO = 1;
MPRINT(QUAD): FBNDX = 1;
MPRINT(QUAD): FCNTX = 1;
MPRINT(QUAD): FGRIX = 1;
MPRINT(QUAD): FLPSX = 1;
MPRINT(QUAD): FMAGX = 1;
MPRINT(QUAD): FOSFX = 1;
MPRINT(QUAD): FUSEX = 1;
MPRINT(QUAD): _GIC_ = 1;
MPRINT(QUAD): _type_ = 'eq';
MPRINT(QUAD): _name_ = 'WGT';
MPRINT(QUAD): _rhs_ = 1;
MPRINT(QUAD): output;
MPRINT(QUAD): end;
MPRINT(QUAD): run;

```

NOTE: There were 9 observations read from the data set WORK.\_COVMAT.

WHERE (\_type\_='COV') and \_name\_ in ('CPO', 'FBNDX', 'FCNTX', 'FGRIX', 'FLPSX', 'FMAGX', 'FOSFX', 'FUSEX', '\_GIC\_');

NOTE: The data set PF.INQUAD has 10 observations and 12 variables.

NOTE: DATA statement used:

real time	0.06 seconds
cpu time	0.06 seconds

```
MPRINT(QUAD): proc sql noprint;
```

```
MPRINT(QUAD): create table _q1 as select 'LINEAR' as _type_, as _rhs_, ticker, PVALUEM as _linear from _in_tv ;
```

NOTE: Table WORK.\_Q1 created, with 9 rows and 4 columns.

NOTE: PROCEDURE SQL used:

real time	0.01 seconds
cpu time	0.00 seconds



```

MPRINT(QUAD):  proc transpose data=_q1 out=_q1;
MPRINT(QUAD):  var _linear;
MPRINT(QUAD):  id ticker;
MPRINT(QUAD):  by _type_ _RHS_ ;

```

```

NOTE: There were 9 observations read from the data set WORK._Q1.
NOTE: The data set WORK._Q1 has 1 observations and 12 variables.
NOTE: PROCEDURE TRANSPOSE used:
      real time      0.01 seconds
      cpu time       0.01 seconds

```

```

MPRINT(QUAD):  data pf.inquad;
MPRINT(QUAD):  set pf.inquad _q1;
MPRINT(QUAD):  run;

```

```

NOTE: There were 10 observations read from the data set PF.INQUAD.
NOTE: There were 1 observations read from the data set WORK._Q1.
NOTE: The data set PF.INQUAD has 11 observations and 12 variables.
NOTE: DATA statement used:
      real time      0.02 seconds
      cpu time       0.00 seconds

```

```

MPRINT(S2QCONST):  proc sort data=pf.sconst(keep = ticker maxwgt) out=_q3;
MPRINT(S2QCONST):  by ticker maxwgt;

```

```

NOTE: There were 4 observations read from the data set PF.SCONST.
NOTE: The data set WORK._Q3 has 4 observations and 2 variables.
NOTE: PROCEDURE SORT used:
      real time      0.02 seconds
      cpu time       0.01 seconds

```

```

MPRINT(S2QCONST):  data _q3;
MPRINT(S2QCONST):  set _q3;
MPRINT(S2QCONST):  by ticker maxwgt;
MPRINT(S2QCONST):  if first.ticker;

```

```

NOTE: There were 4 observations read from the data set WORK._Q3.
NOTE: The data set WORK._Q3 has 4 observations and 2 variables.
NOTE: DATA statement used:
      real time      0.02 seconds
      cpu time       0.01 seconds

```

```

MPRINT(S2QCONST):  proc transpose data=_q3 out=_q4;
MPRINT(S2QCONST):  var maxwgt;
MPRINT(S2QCONST):  id ticker;
NOTE: There were 4 observations read from the data set WORK._Q3.
NOTE: The data set WORK._Q4 has 1 observations and 5 variables.
NOTE: PROCEDURE TRANSPOSE used:
      real time      0.01 seconds
      cpu time       0.00 seconds

```

```

MPRINT(S2QCONST): data _q4;
MPRINT(S2QCONST): format _type_ $8. _name_ $8.;
MPRINT(S2QCONST): set _q4;
MPRINT(S2QCONST): _type_ = 'upperbd';
MPRINT(S2QCONST): _name_ = 'UPPER';
MPRINT(S2QCONST): _RHS_ = .;
MPRINT(S2QCONST): if CPO eq . then CPO = 1;
MPRINT(S2QCONST): if FBNDX eq . then FBNDX = 1;
MPRINT(S2QCONST): if FCNTX eq . then FCNTX = 1;
MPRINT(S2QCONST): if FGRIX eq . then FGRIX = 1;
MPRINT(S2QCONST): if FLPSX eq . then FLPSX = 1;
MPRINT(S2QCONST): if FMAGX eq . then FMAGX = 1;
MPRINT(S2QCONST): if FOSFX eq . then FOSFX = 1;
MPRINT(S2QCONST): if FUSEX eq . then FUSEX = 1;
MPRINT(S2QCONST): if _GIC_ eq . then _GIC_ = 1;
MPRINT(S2QCONST): run;

```

NOTE: There were 1 observations read from the data set WORK.\_Q4.  
 NOTE: The data set WORK.\_Q4 has 1 observations and 14 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.01 seconds

```

MPRINT(S2QCONST): proc sort data=pf.sconst(keep = ticker minwgt) out=_q5;
MPRINT(S2QCONST): by ticker descending minwgt;

```

NOTE: There were 4 observations read from the data set PF.SCONST.  
 NOTE: The data set WORK.\_Q5 has 4 observations and 2 variables.

NOTE: PROCEDURE SORT used:

real time	0.03 seconds
cpu time	0.00 seconds

```

MPRINT(S2QCONST): data _q5;
MPRINT(S2QCONST): set _q5;
MPRINT(S2QCONST): by ticker descending minwgt;
MPRINT(S2QCONST): if first.ticker;

```

NOTE: There were 4 observations read from the data set WORK.\_Q5.  
 NOTE: The data set WORK.\_Q5 has 4 observations and 2 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.02 seconds

```

MPRINT(S2QCONST): proc transpose data=_q5 out=_q6;
MPRINT(S2QCONST): var minwgt;
MPRINT(S2QCONST): id ticker;
NOTE: There were 4 observations read from the data set WORK._Q5.
NOTE: The data set WORK._Q6 has 1 observations and 5 variables.
NOTE: PROCEDURE TRANSPOSE used:

```

real time	0.01 seconds
cpu time	0.00 seconds

```

MPRINT(S2QCONST): data _q6;
MPRINT(S2QCONST): format _type_ $8. _name_ $8.;

```

```

MPRINT(S2QCONST): set _q6;
MPRINT(S2QCONST): _type_ = 'lowerbd';
MPRINT(S2QCONST): _name_ = 'LOWER';
MPRINT(S2QCONST): _RHS_ = .;
MPRINT(S2QCONST): if CPO eq . then CPO = 0;
MPRINT(S2QCONST): if FBNDX eq . then FBNDX = 0;
MPRINT(S2QCONST): if FCNTX eq . then FCNTX = 0;
MPRINT(S2QCONST): if FGRIX eq . then FGRIX = 0;
MPRINT(S2QCONST): if FLPSX eq . then FLPSX = 0;
MPRINT(S2QCONST): if FMAGX eq . then FMAGX = 0;
MPRINT(S2QCONST): if FOSFX eq . then FOSFX = 0;
MPRINT(S2QCONST): if FUSEX eq . then FUSEX = 0;
MPRINT(S2QCONST): if _GIC_ eq . then _GIC_ = 0;
MPRINT(S2QCONST): run;

```

NOTE: There were 1 observations read from the data set WORK.\_Q6.

NOTE: The data set WORK.\_Q6 has 1 observations and 14 variables.

NOTE: DATA statement used:

```

real time      0.02 seconds
cpu time       0.02 seconds

```

```

MPRINT(S2QCONST): data tsconst(keep = _type_ _name_ _rhs_ CPO FBNDX FCNTX FGRIX FLPSX FMAGX FOSFX FUSEX _GIC_);
MPRINT(S2QCONST): set _q4 _q6;
MPRINT(S2QCONST): run;

```

NOTE: There were 1 observations read from the data set WORK.\_Q4.

NOTE: There were 1 observations read from the data set WORK.\_Q6.

NOTE: The data set WORK.TSCONST has 2 observations and 12 variables.

NOTE: DATA statement used:

```

real time      0.02 seconds
cpu time       0.02 seconds

```

```

MPRINT(TRASH): proc datasets nolist lib=work;
MPRINT(TRASH): delete _q3 _q4 _q5 _q6;
MPRINT(TRASH): run;

```

```

NOTE: Deleting WORK._Q3 (memtype=DATA).
NOTE: Deleting WORK._Q4 (memtype=DATA).
NOTE: Deleting WORK._Q5 (memtype=DATA).
NOTE: Deleting WORK._Q6 (memtype=DATA).
MPRINT(S2QCONST): ;
MPRINT(QUAD): ;

```

NOTE: PROCEDURE DATASETS used:

```

real time      0.04 seconds
cpu time       0.00 seconds

```

```

MPRINT(QUAD): proc append base=pf.inquad data=tsconst force;
MPRINT(QUAD): run;

```

NOTE: Appending WORK.TSCONST to PF.INQUAD.

NOTE: There were 2 observations read from the data set WORK.TSCONST.

NOTE: 2 observations added.

NOTE: The data set PF.INQUAD has 13 observations and 12 variables.

NOTE: PROCEDURE APPEND used:

```

real time      0.01 seconds

```

cpu time 0.00 seconds

```
MPRINT(QUAD): proc transpose data=_initval out=_ql;
MPRINT(QUAD): var wgt;
MPRINT(QUAD): id ticker;
MPRINT(QUAD): run;
```

NOTE: There were 9 observations read from the data set WORK.\_INITVAL.  
NOTE: The data set WORK.\_Q1 has 1 observations and 10 variables.

```
NOTE: PROCEDURE TRANSPOSE used:
      real time    0.01 seconds
      cpu time     0.00 seconds
```

```
MPRINT(QUAD): data _ql;
MPRINT(QUAD): format _name_ $8.;
MPRINT(QUAD): set _ql;
MPRINT(QUAD): _type_ = 'PARMS ' ;
MPRINT(QUAD): _RHS_ = .;
```

NOTE: There were 1 observations read from the data set WORK.\_Q1.  
NOTE: The data set WORK.\_Q1 has 1 observations and 12 variables.

```
NOTE: DATA statement used:
      real time    0.01 seconds
      cpu time     0.02 seconds
```

```
MPRINT(QUAD): proc append base=pf.inquad data=_ql force;
MPRINT(QUAD): run;
```

NOTE: Appending WORK.\_Q1 to PF.INQUAD.

NOTE: There were 1 observations read from the data set WORK.\_Q1.  
NOTE: 1 observations added.

NOTE: The data set PF.INQUAD has 14 observations and 12 variables.  
NOTE: PROCEDURE APPEND used:

```
      real time    0.01 seconds
      cpu time     0.00 seconds
```

```
MPRINT(T2QCONST): proc sql noprint;
MPRINT(T2QCONST): select count(*) into :cnt from pf.adjconst;
NOTE: PROCEDURE SQL used:
```

```
      real time    0.00 seconds
      cpu time     0.00 seconds
```

```
MPRINT(T2QCONST): proc sql noprint;
MPRINT(T2QCONST): select var, minwgt,maxwgt into :vname1, :vname6, :minwgt1 - :minwgt6, :maxwgt1 - :maxwgt6 from pf.adjconst;
```

NOTE: PROCEDURE SQL used:

```
      real time    0.00 seconds
      cpu time     0.01 seconds
```

```
MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): format _name_ $8. ticker $8. wgt 15.8 _type_ $8. _rhs_ 15.8;
MPRINT(T2QCONST): if l=2;
MPRINT(T2QCONST): _name_='';
```

```

MPRINT(T2QCONST): ticker = '';
MPRINT(T2QCONST): wgt = .;
MPRINT(T2QCONST): _type_ = '';
MPRINT(T2QCONST): _rhs_ = .;
MPRINT(T2QCONST): run;

```

NOTE: The data set WORK\_Q7 has 0 observations and 5 variables.

```

NOTE: DATA statement used:
      real time      0.01 seconds
      cpu time       0.01 seconds

```

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7_in_tv(in=inb keep=ticker BONDS rename=(BONDS=wgt ));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "BONDS";
MPRINT(T2QCONST):   _type_ = 'ge';
MPRINT(T2QCONST):   _rhs_ = 0.01647;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 0 observations read from the data set WORK\_Q7.

NOTE: There were 9 observations read from the data set WORK\_IN\_TV.

NOTE: The data set WORK\_Q7 has 9 observations and 5 variables.

```

NOTE: DATA statement used:
      real time      0.02 seconds
      cpu time       0.01 seconds

```

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7_in_tv(in=inb keep=ticker BONDS rename=(BONDS=wgt));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "BONDS";
MPRINT(T2QCONST):   _type_ = 'le';
MPRINT(T2QCONST):   _rhs_ = 0.21647;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 9 observations read from the data set WORK\_Q7.

NOTE: There were 9 observations read from the data set WORK\_IN\_TV.

NOTE: The data set WORK\_Q7 has 18 observations and 5 variables.

```

NOTE: DATA statement used:
      real time      0.02 seconds
      cpu time       0.02 seconds

```

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7_in_tv(in=inb keep=ticker CASH rename=(CASH=wgt ));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "CASH";
MPRINT(T2QCONST):   _type_ = 'ge';
MPRINT(T2QCONST):   _rhs_ = -0.0735;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 18 observations read from the data set WORK\_Q7.

NOTE: There were 9 observations read from the data set WORK\_IN\_TV.

NOTE: The data set WORK\_Q7 has 27 observations and 5 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.01 seconds

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7_in_tv(in=inb keep=ticker CASH rename=(CASH=wt));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "CASH";
MPRINT(T2QCONST):   _type_ = 'le';
MPRINT(T2QCONST):   _rhs_ = 0.126496;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 27 observations read from the data set WORK.\_Q7.

NOTE: There were 9 observations read from the data set WORK.\_IN\_TV.

NOTE: The data set WORK.\_Q7 has 36 observations and 5 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.02 seconds

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7_in_tv(in=inb keep=ticker FSTOCKS rename=(FSTOCKS=wt));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "FSTOCKS";
MPRINT(T2QCONST):   _type_ = 'ge';
MPRINT(T2QCONST):   _rhs_ = -0.05657;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 36 observations read from the data set WORK.\_Q7.

NOTE: There were 9 observations read from the data set WORK.\_IN\_TV.

NOTE: The data set WORK.\_Q7 has 45 observations and 5 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.01 seconds

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7_in_tv(in=inb keep=ticker FSTOCKS rename=(FSTOCKS=wt));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "FSTOCKS";
MPRINT(T2QCONST):   _type_ = 'le';
MPRINT(T2QCONST):   _rhs_ = 0.103428;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 45 observations read from the data set WORK.\_Q7.

NOTE: There were 9 observations read from the data set WORK.\_IN\_TV.

NOTE: The data set WORK.\_Q7 has 54 observations and 5 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.01 seconds

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7_in_tv(in=inb keep=ticker HYBONDS rename=(HYBONDS=wt));

```

```

MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "HYBONDS";
MPRINT(T2QCONST):   _type_ = 'ge';
MPRINT(T2QCONST):   _rhs_ = -0.1;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 54 observations read from the data set WORK\_Q7.  
 NOTE: There were 9 observations read from the data set WORK\_IN\_TV.  
 NOTE: The data set WORK\_Q7 has 63 observations and 5 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.02 seconds

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7_in_tv(in=inb keep=ticker HYBONDS rename=(HYBONDS=wtg));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "HYBONDS";
MPRINT(T2QCONST):   _type_ = 'le';
MPRINT(T2QCONST):   _rhs_ = 0.1;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 63 observations read from the data set WORK\_Q7.  
 NOTE: There were 9 observations read from the data set WORK\_IN\_TV.  
 NOTE: The data set WORK\_Q7 has 72 observations and 5 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.02 seconds

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7_in_tv(in=inb keep=ticker OTHER rename=(OTHER=wtg ));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "OTHER";
MPRINT(T2QCONST):   _type_ = 'ge';
MPRINT(T2QCONST):   _rhs_ = -0.1;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 72 observations read from the data set WORK\_Q7.  
 NOTE: There were 9 observations read from the data set WORK\_IN\_TV.  
 NOTE: The data set WORK\_Q7 has 81 observations and 5 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.01 seconds

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7_in_tv(in=inb keep=ticker OTHER rename=(OTHER=wtg));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "OTHER";
MPRINT(T2QCONST):   _type_ = 'le';
MPRINT(T2QCONST):   _rhs_ = 0.1;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 81 observations read from the data set WORK\_Q7.  
 NOTE: There were 9 observations read from the data set WORK\_IN\_TV.  
 NOTE: The data set WORK\_Q7 has 90 observations and 5 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.01 seconds

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7 _in_tv(in=inb keep=ticker STOCKS rename=(STOCKS=wgt ));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "STOCKS";
MPRINT(T2QCONST):   _type_ = 'ge';
MPRINT(T2QCONST):   _rhs_ = 0.847033;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 90 observations read from the data set WORK\_Q7.  
 NOTE: There were 9 observations read from the data set WORK\_IN\_TV.  
 NOTE: The data set WORK\_Q7 has 99 observations and 5 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.02 seconds

```

MPRINT(T2QCONST): data _q7;
MPRINT(T2QCONST): set _q7 _in_tv(in=inb keep=ticker STOCKS rename=(STOCKS=wgt));
MPRINT(T2QCONST): if inb then do;
MPRINT(T2QCONST):   _name_ = "STOCKS";
MPRINT(T2QCONST):   _type_ = 'le';
MPRINT(T2QCONST):   _rhs_ = 0.867033;
MPRINT(T2QCONST): end;
MPRINT(T2QCONST): run;

```

NOTE: There were 99 observations read from the data set WORK\_Q7.  
 NOTE: There were 9 observations read from the data set WORK\_IN\_TV.  
 NOTE: The data set WORK\_Q7 has 108 observations and 5 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.02 seconds

```

MPRINT(T2QCONST): proc sort data=_q7;
MPRINT(T2QCONST): by _name_ _type_ _rhs_;
MPRINT(T2QCONST): run;

```

NOTE: There were 108 observations read from the data set WORK\_Q7.  
 NOTE: The data set WORK\_Q7 has 108 observations and 5 variables.

NOTE: PROCEDURE SORT used:

real time	0.01 seconds
cpu time	0.00 seconds

```

MPRINT(T2QCONST): proc transpose data=_q7 out=ttconst(drop=_label_);
MPRINT(T2QCONST): by _name_ _type_ _rhs_;
MPRINT(T2QCONST): id ticker;
MPRINT(T2QCONST): var wgt;
MPRINT(T2QCONST): run;

```



NOTE: There were 108 observations read from the data set WORK.\_Q7.  
 NOTE: The data set WORK.TTCONST has 12 observations and 12 variables.

NOTE: PROCEDURE TRANSPOSE used;

real time	0.02 seconds
cpu time	0.01 seconds

```
MPRINT(TRASH): proc datasets nolist lib=work;
MPRINT(TRASH): delete _q7;
MPRINT(TRASH): run;
```

NOTE: Deleting WORK.\_Q7 (mentype=DATA).

```
MPRINT(T2QCONST): ;
MPRINT(QUAD): ;
```

NOTE: PROCEDURE DATASETS used;

real time	0.02 seconds
cpu time	0.02 seconds

```
MPRINT(QUAD): proc append base=pf.inquad data=ttconst force;
MPRINT(QUAD): run;
```

NOTE: Appending WORK.TTCONST to PF.INQUAD.

NOTE: There were 12 observations read from the data set WORK.TTCONST.

NOTE: 12 observations added.

NOTE: The data set PF.INQUAD has 26 observations and 12 variables.

NOTE: PROCEDURE APPEND used;

real time	0.01 seconds
cpu time	0.01 seconds

```
MPRINT(TRASH): proc datasets nolist lib=work;
```

```
MPRINT(TRASH): delete _q1 _q2;
```

```
MPRINT(TRASH): run;
```

NOTE: The file WORK.\_Q2 (mentype=DATA) was not found, but appears on a DELETE statement.

```
NOTE: Deleting WORK._Q1 (mentype=DATA).
```

```
MPRINT(QUAD): ;
```

```
MPRINT(DISCOPT): ;
```

NOTE: PROCEDURE DATASETS used;

real time	0.02 seconds
cpu time	0.01 seconds

```
MPRINT(DISCOPT): proc transpose data=pf.inquad(drop= where=(name="LOWER")) out=l(rename=(name=ticker));
NOTE: There were 1 observations read from the data set PF.INQUAD.
```

```
WHERE name="LOWER";
```

NOTE: The data set WORK.L has 10 observations and 2 variables.

NOTE: PROCEDURE TRANSPOSE used;

real time	0.02 seconds
cpu time	0.00 seconds

```
MPRINT(DISCOPT): proc transpose data=pf.inquad(drop= where=(name="UPPER")) out=u(rename=(name=ticker));
NOTE: There were 1 observations read from the data set PF.INQUAD.
```

```
WHERE name="UPPER";
```

NOTE: The data set WORK.U has 10 observations and 2 variables.

NOTE: PROCEDURE TRANSPOSE used:  
 real time 0.02 seconds  
 cpu time 0.01 seconds

MPRINT(DISCOPT): proc sort data=u;  
 MPRINT(DISCOPT): by ticker;  
 NOTE: There were 10 observations read from the data set WORK.U.  
 NOTE: The data set WORK.U has 10 observations and 2 variables.  
 NOTE: PROCEDURE SORT used:  
 real time 0.01 seconds  
 cpu time 0.00 seconds

MPRINT(DISCOPT): proc sort data=l;  
 MPRINT(DISCOPT): by ticker;  
 MPRINT(DISCOPT): run;  
 NOTE: There were 10 observations read from the data set WORK.L.  
 NOTE: The data set WORK.L has 10 observations and 2 variables.  
 NOTE: PROCEDURE SORT used:  
 real time 0.01 seconds  
 cpu time 0.01 seconds

MPRINT(DISCOPT): data constrai;  
 MPRINT(DISCOPT): merge u l;  
 MPRINT(DISCOPT): by ticker;  
 MPRINT(DISCOPT): prev = -1;  
 MPRINT(DISCOPT): run;  
 NOTE: There were 10 observations read from the data set WORK.U.  
 NOTE: There were 10 observations read from the data set WORK.U.  
 NOTE: The data set WORK.CONSTRAI has 10 observations and 4 variables.  
 NOTE: DATA statement used:  
 real time 0.01 seconds  
 cpu time 0.01 seconds

MPRINT(PUSHONE): data \_const;  
 MPRINT(PUSHONE): length ticker \$8;  
 MPRINT(PUSHONE): set constrai;  
 MPRINT(PUSHONE): pos = 1;  
 MPRINT(PUSHONE): prev = -1;  
 NOTE: There were 10 observations read from the data set WORK.CONSTRAI.  
 NOTE: The data set WORK.\_CONST has 10 observations and 5 variables.  
 NOTE: DATA statement used:  
 real time 0.01 seconds  
 cpu time 0.00 seconds

MPRINT(PUSHONE): proc append base=stack data=\_const;  
 NOTE: Appending WORK.\_CONST to WORK.STACK.  
 NOTE: There were 10 observations read from the data set WORK.\_CONST.  
 NOTE: 10 observations added.  
 NOTE: The data set WORK.STACK has 10 observations and 5 variables.  
 NOTE: PROCEDURE APPEND used:

real time 0.01 seconds  
cpu time 0.01 seconds

```
MPRINT(PUSHONE): data _consto;
MPRINT(PUSHONE): format ticker $8.;
MPRINT(PUSHONE): pos = 1;
MPRINT(PUSHONE): ticker = "";
MPRINT(PUSHONE): cur = -1;
MPRINT(PUSHONE): prev = -1;
MPRINT(PUSHONE): opt = 0;
MPRINT(PUSHONE): objval = -99999;
MPRINT(PUSHONE): dist2min = 999;
MPRINT(PUSHONE): run;
```

NOTE: The data set WORK.\_CONSTO has 1 observations and 7 variables.

NOTE: Data statement used: 0.01 seconds  
real time  
cpu time 0.01 seconds

```
MPRINT(PUSHONE): proc append base=stacko data=_consto;
MPRINT(DISOPT): ;
```

NOTE: Appending WORK.\_CONSTO to WORK.STACKO.

NOTE: There were 1 observations read from the data set WORK.\_CONSTO.

NOTE: 1 observations added.

NOTE: The data set WORK.STACKO has 1 observations and 7 variables.

NOTE: PROCEDURE APPEND used:

real time 0.01 seconds  
cpu time 0.02 seconds

```
MPRINT(POPSTK): proc sql noprint;
```

```
MPRINT(POPSTK): create table _conpos as select so.objval, so.dist2min, so.opt, so.pos, count(*) as cnt from stack s, stacko so
where s.pos=so.pos and s.upper ne 0 and s.lower ne 0.05 group by so.dist2min, so.objval, so.opt, so.pos order by so.dist2min,
so.objval, so.opt, so.pos;
```

NOTE: Table WORK.\_CONPOS created, with 1 rows and 5 columns.

NOTE: PROCEDURE SQL used:

real time 0.02 seconds  
cpu time 0.01 seconds

```
MPRINT(POPSTK): proc sql;
```

```
MPRINT(POPSTK): select count(*) into :cntcnt from _conpos;
```

NOTE: The PROCEDURE SQL printed page 12.

NOTE: PROCEDURE SQL used:

real time 0.00 seconds  
cpu time 0.01 seconds

```
MPRINT(POPSTK): data _null_;
```

```
MPRINT(POPSTK): set _conpos(obs=1);
```

```
MPRINT(POPSTK): call symput("minpos",trim(left(put(pos,8))));
```

```
MPRINT(POPSTK): run;
```

NOTE: There were 1 observations read from the data set WORK.\_CONPOS.

NOTE: DATA statement used:

real time	0.00 seconds
cpu time	0.00 seconds

```

MPRINT(POPSTK): data constrai stack;
MPRINT(POPSTK): set stack;
MPRINT(POPSTK): if pos = 1 then do;
MPRINT(POPSTK): output constrai;
MPRINT(POPSTK): end;
MPRINT(POPSTK): else do;
MPRINT(POPSTK): if pos > 1 then pos = pos - 1;
MPRINT(POPSTK): output stack;
MPRINT(POPSTK): end;
MPRINT(POPSTK): run;

```

NOTE: There were 10 observations read from the data set WORK.STACK.

NOTE: The data set WORK.CONSTRAI has 10 observations and 5 variables.

NOTE: The data set WORK.STACK has 0 observations and 5 variables.

NOTE: DATA statement used:

real time	0.03 seconds
cpu time	0.00 seconds

```

MPRINT(POPSTK): data stacko;
MPRINT(POPSTK): set stacko;
MPRINT(POPSTK): if pos = 1 then do;
MPRINT(POPSTK): call symput("objval",objval);
MPRINT(POPSTK): put ".popping " ticker ":" objval "at " prev ") -> " cur "out of 1" ;
MPRINT(POPSTK): end;
MPRINT(POPSTK): else do;
MPRINT(POPSTK): if pos > 1 then pos = pos - 1;
MPRINT(POPSTK): output;
MPRINT(POPSTK): end;
MPRINT(POPSTK): run;

```

NOTE: Numeric values have been converted to character values at the places given by: (Line):(Column).

11788:180

.popping :(-99999 at -1 ) -> -1 out of 1

NOTE: There were 1 observations read from the data set WORK.STACKO.

NOTE: The data set WORK.STACKO has 0 observations and 7 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.01 seconds

```

MPRINT(DISCOPT): ;
MPRINT(DISCOPT): data _null_;
MPRINT(DISCOPT): title "Iteration 1 minobjfn = 99999 last objfnval = ";
MPRINT(DISCOPT): run;

```

NOTE: DATA statement used:

real time	0.00 seconds
cpu time	0.00 seconds

```

MPRINT(RUNCOPT): proc transpose data=constrai(keep=ticker lower) out=l;
MPRINT(RUNCOPT): id ticker;

```

NOTE: There were 10 observations read from the data set WORK.CONSTRAI.

NOTE: The data set WORK.L has 1 observations and 11 variables.

NOTE: PROCEDURE TRANSPOSE used:

real time	0.01 seconds
cpu time	0.01 seconds

```
MPRINT(RUNCOPT):  proc transpose data=constrai(keep=ticker upper) out=u;
MPRINT(RUNCOPT):  id ticker;
```

NOTE: There were 10 observations read from the data set WORK.CONSTRAI.

NOTE: The data set WORK.U has 1 observations and 11 variables.

NOTE: PROCEDURE TRANSPOSE used:

real time	0.01 seconds
cpu time	0.00 seconds

```
MPRINT(RUNCOPT):  data l;
MPRINT(RUNCOPT):  set l;
MPRINT(RUNCOPT):  _name_ = "LOWER";
MPRINT(RUNCOPT):  _type_ = "lowerbd";
```

NOTE: There were 1 observations read from the data set WORK.L.

NOTE: The data set WORK.L has 1 observations and 12 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.00 seconds

```
MPRINT(RUNCOPT):  data u;
MPRINT(RUNCOPT):  set u;
MPRINT(RUNCOPT):  _name_ = "UPPER";
MPRINT(RUNCOPT):  _type_ = "upperbd";
MPRINT(RUNCOPT):  run;
```

NOTE: There were 1 observations read from the data set WORK.U.

NOTE: The data set WORK.U has 1 observations and 12 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.00 seconds

```
MPRINT(RUNCOPT):  data pf.inquad;
MPRINT(RUNCOPT):  set pf.inquad(wher=( _name_ not in ("LOWER", "UPPER"))) 1 u;
MPRINT(RUNCOPT):  run;
```

NOTE: There were 24 observations read from the data set PF.INQUAD.

WHERE \_name\_ not in ('LOWER', 'UPPER');

NOTE: There were 1 observations read from the data set WORK.L.

NOTE: There were 1 observations read from the data set WORK.U.

NOTE: The data set PF.INQUAD has 26 observations and 12 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.02 seconds

.quad call 1 .

```

MPRINT(CALLNLP): proc nlp inquad=pf.inquad outest=toutquad cov=2 ;
MPRINT(CALLNLP): min;
MPRINT(CALLNLP): parms CPO FBNDX FCNTX FGRIX FLPX FMAXX FOSFX FUSEX _GIC_ ;
MPRINT(CALLNLP): run;

```

NOTE: Your code contains 0 program statements.

NOTE: Analytic derivatives are used with a quadratic optimization problem.

WARNING: A total of 1 identical linear constraints are deleted.

NOTE: Initial value of parameter CPO is set randomly to 0.0374011193.

NOTE: Initial value of parameter FBNDX is set randomly to 0.692039742.

NOTE: Initial value of parameter FCNTX is set randomly to 0.7295711342.

NOTE: Initial value of parameter FGRIX is set randomly to 0.3651817298.

NOTE: Initial value of parameter FLPX is set randomly to 0.143754704.

NOTE: Initial value of parameter FMAXX is set randomly to 0.9569836841.

NOTE: Initial value of parameter FOSFX is set randomly to 0.2063702742.

NOTE: Initial value of parameter FUSEX is set randomly to 0.7789351362.

NOTE: Initial value of parameter \_GIC\_ is set randomly to 0.0473946906.

NOTE: Initial point was changed to be feasible for boundary and linear constraints.

NOTE: ABSGCONV convergence criterion satisfied.

NOTE: There were 26 observations read from the data set PF.INQUAD.

NOTE: The data set WORK.TOUTQUAD has 63 observations and 14 variables.

NOTE: The PROCEDURE NLP printed pages 13-16.

NOTE: PROCEDURE NLP used:

real time	0.13 seconds
cpu time	0.06 seconds

```

MPRINT(CALLNLP): proc sql noprint;
MPRINT(CALLNLP): select _rhs_ into :objfnval from toutquad where _type_ = 'PARMS';
MPRINT(RUNCOPT) : ;
NOTE: PROCEDURE SQL used:
real time      0.00 seconds
cpu time       0.00 seconds

```

```

MPRINT(Q2CTW) : proc sql;
MPRINT(Q2CTW) : select _rhs_ into :objfnval from toutquad where _type_ = 'PARMS';
NOTE: The PROCEDURE SQL printed page 17.
NOTE: PROCEDURE SQL used:
real time      0.00 seconds
cpu time       0.01 seconds

```

```

MPRINT(Q2CTW) : data _qctw(drop=_type_ _rhs_);
MPRINT(Q2CTW) : format cticker $8.;
MPRINT(Q2CTW) : set toutquad(drop=_name_ _iter_ _tech_ where=(_type_='PARMS'));
MPRINT(Q2CTW) : cticker = "PARMS";
MPRINT(Q2CTW) : call symput("OBJFNVAL",put(_rhs_,best.));
MPRINT(Q2CTW) : if _rhs_ ne . then do;
MPRINT(Q2CTW) : output;
MPRINT(Q2CTW) : call symput("OSTATUS","0");
MPRINT(Q2CTW) : end;
MPRINT(Q2CTW) : else do;
MPRINT(Q2CTW) : call symput("OSTATUS","1");
MPRINT(Q2CTW) : end;
MPRINT(Q2CTW) : run;

```

NOTE: There were 1 observations read from the data set WORK.TOUTQUAD.

```
WHERE _type_='PARMS';
```

NOTE: The data set WORK.\_QCTW has 1 observations and 10 variables.

NOTE: DATA statement used:

```
real time      0.02 seconds
cpu time       0.01 seconds
```

```
MPRINT(Q2CTW):  proc transpose data=_qctw out=_qctw(rename={_name=ticker coll=wgt});
MPRINT(Q2CTW):  by ticker;
MPRINT(Q2CTW):  run;
```

NOTE: There were 1 observations read from the data set WORK.\_QCTW.

NOTE: The data set WORK.\_QCTW has 9 observations and 3 variables.

NOTE: PROCEDURE TRANSPOSE used:

```
real time      0.01 seconds
cpu time       0.00 seconds
```

```
MPRINT(RUNCOPT): ;
MPRINT(DIST2MIN): data _null_;
MPRINT(DIST2MIN): retain distance 0;
MPRINT(DIST2MIN): set _qctw end=eof;
MPRINT(DIST2MIN): if wgt < 0.05 then do;
MPRINT(DIST2MIN): if wgt < 0.05/2 then distance = distance + wgt;
MPRINT(DIST2MIN): else distance = distance + 0.05 - wgt;
MPRINT(DIST2MIN): end;
MPRINT(DIST2MIN): if eof then call symput("DIST2MIN",put(distance,8.6));
MPRINT(DIST2MIN): run;
```

NOTE: There were 9 observations read from the data set WORK.\_QCTW.

NOTE: DATA statement used:

```
real time      0.00 seconds
cpu time       0.01 seconds
```

```
MPRINT(RUNCOPT): ;
MPRINT(RUNCOPT): proc sql noprint;
MPRINT(RUNCOPT): select ticker,wgt into :hitick, :maxlf from _qctw having wgt = (select max(wgt) from _qctw where wgt < 0.05 -
1E-8 and wgt > 1E-8);
MPRINT(RUNCOPT): select ticker,wgt into :lowtick, :mingz from _qctw having wgt = (select min(wgt) from _qctw where wgt > 1E-8 and
wgt < 0.05 - 1E-8);
MPRINT(DISCOPT): ;
.pushing FCNTX :{0.2497684956 at 0.040974 } -> 0 .
NOTE: PROCEDURE SQL used:
```

```
real time      0.02 seconds
cpu time       0.02 seconds
```

```
MPRINT(PUSHBND): data _const;
MPRINT(PUSHBND): set constrai;
MPRINT(PUSHBND): pos = 1;
MPRINT(PUSHBND): if ticker = "FCNTX" then do;
MPRINT(PUSHBND): lower = 0;
MPRINT(PUSHBND): upper = 0;
MPRINT(PUSHBND): prev = 0.040974;
MPRINT(PUSHBND): end;
```

NOTE: There were 10 observations read from the data set WORK.CONSTRAI.

NOTE: The data set WORK.\_CONST has 10 observations and 5 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.00 seconds

```
MPRINT(PUSHEND): proc append base=stack data=_const;
```

```
NOTE: Appending WORK._CONST to WORK.STACK.
```

NOTE: There were 10 observations read from the data set WORK.\_CONST.

NOTE: 10 observations added.

NOTE: The data set WORK.STACK has 10 observations and 5 variables.

NOTE: PROCEDURE APPEND used:

real time	0.01 seconds
cpu time	0.00 seconds

```
MPRINT(PUSHEND): data _consto;
MPRINT(PUSHEND): format ticker $8.;
MPRINT(PUSHEND): pos = 1;
MPRINT(PUSHEND): ticker = "FCNTX";
MPRINT(PUSHEND): cur = 0;
MPRINT(PUSHEND): prev = 0.040974;
MPRINT(PUSHEND): objval = 0.2497684956;
MPRINT(PUSHEND): opt = abs(prev-cur);
MPRINT(PUSHEND): dist2min = 0.009026;
MPRINT(PUSHEND): run;
```

NOTE: The data set WORK.\_CONSTO has 1 observations and 7 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.01 seconds

```
MPRINT(PUSHEND): proc append base=stacko data=_consto;
```

```
MPRINT(PUSHSTK): ;
```

```
..pushing FCNTX : (0.2497684956 at 0.040974 ) -> 0.05 .
```

```
NOTE: Appending WORK._CONSTO to WORK.STACKO.
```

NOTE: There were 1 observations read from the data set WORK.\_CONSTO.

NOTE: 1 observations added.

NOTE: The data set WORK.STACKO has 1 observations and 7 variables.

NOTE: PROCEDURE APPEND used:

real time	0.01 seconds
cpu time	0.01 seconds

```
MPRINT(PUSHEND): data _const;
MPRINT(PUSHEND): set constral;
MPRINT(PUSHEND): pos = 2;
MPRINT(PUSHEND): if ticker = "FCNTX" then do;
MPRINT(PUSHEND): lower = 0.05;
MPRINT(PUSHEND): upper = upper;
MPRINT(PUSHEND): prev = 0.040974;
MPRINT(PUSHEND): end;
```

NOTE: There were 10 observations read from the data set WORK.CONSTRA1.

NOTE: The data set WORK.\_CONST has 10 observations and 5 variables.

NOTE: DATA statement used:



```

real time      0.01 seconds
cpu time       0.02 seconds

```

```

MPRINT(PUSHEND):  proc append base=stack data=_const;
NOTE: Appending WORK._CONST to WORK.STACK.
NOTE: There were 10 observations read from the data set WORK._CONST.
NOTE: 10 observations added.
NOTE: The data set WORK.STACK has 20 observations and 5 variables.
NOTE: PROCEDURE APPEND used:
real time      0.01 seconds
cpu time       0.00 seconds

```

```

MPRINT(PUSHEND):  data _const;
MPRINT(PUSHEND):  format ticker $8.;
MPRINT(PUSHEND):  pos = 2;
MPRINT(PUSHEND):  ticker = "FCNTX";
MPRINT(PUSHEND):  cur = 0.05;
MPRINT(PUSHEND):  prev = 0.040974;
MPRINT(PUSHEND):  objval = 0.2497684956;
MPRINT(PUSHEND):  opt = abs(prev-cur);
MPRINT(PUSHEND):  dist2min = 0.009026;
MPRINT(PUSHEND):  run;

```

```

NOTE: The data set WORK._CONSTO has 1 observations and 7 variables.
NOTE: DATA statement used:
real time      0.04 seconds
cpu time       0.01 seconds

```

```

MPRINT(PUSHEND):  proc append base=stacko data=_consto;
MPRINT(PUSHSTK):  ;
MPRINT(DISCOPT):  ;

```

```

NOTE: Appending WORK._CONSTO to WORK.STACKO.
NOTE: There were 1 observations read from the data set WORK._CONSTO.
NOTE: 1 observations added.
NOTE: The data set WORK.STACKO has 2 observations and 7 variables.
NOTE: PROCEDURE APPEND used:
real time      0.01 seconds
cpu time       0.00 seconds

```

```

MPRINT(DISCOPT):  proc sql;
MPRINT(DISCOPT):  select min(objval) into :potent1 from stacko;
NOTE: The PROCEDURE SQL printed page 18.
NOTE: PROCEDURE SQL used:
real time      0.00 seconds
cpu time       0.01 seconds

```

```

MPRINT(FORCEMIN):  proc sql;
MPRINT(FORCEMIN):  create table _force as select a.ticker,a.wgt,b.lower,b.upper from _qctw a left join constrai b on
a.ticker=b.ticker order by a.wgt;
NOTE: Table WORK._FORCE created, with 9 rows and 4 columns.
NOTE: PROCEDURE SQL used:

```

```

real time      0.02 seconds
cpu time       0.02 seconds

```

```

MPRINT(FORCEMIN): data constrai;
MPRINT(FORCEMIN): set _force nobs=_nobs;
MPRINT(FORCEMIN): if 0.05*(_nobs-_n_) > 1 or wgt < 0.05/2 then do;
MPRINT(FORCEMIN): upper = 0;
MPRINT(FORCEMIN): lower = 0;
MPRINT(FORCEMIN): end;
MPRINT(FORCEMIN): else do;
MPRINT(FORCEMIN): if lower < 0.05 then lower = 0.05;
MPRINT(FORCEMIN): if upper eq . then upper = 1;
MPRINT(FORCEMIN): end;
MPRINT(FORCEMIN): run;

```

```

NOTE: There were 9 observations read from the data set WORK._FORCE.
NOTE: The data set WORK.CONSTRAI has 9 observations and 4 variables.
NOTE: DATA statement used:
      real time      0.01 seconds
      cpu time       0.01 seconds

```

```

MPRINT(DISCOPT): ;
MPRINT(DISCOPT): proc print data=_force;
MPRINT(DISCOPT): title "force";
NOTE: There were 9 observations read from the data set WORK._FORCE.
NOTE: The PROCEDURE PRINT printed page 19.
NOTE: PROCEDURE PRINT used:
      real time      0.00 seconds
      cpu time       0.00 seconds

```

```

MPRINT(DISCOPT): proc print data=constrai;
MPRINT(DISCOPT): title "constrai";
MPRINT(DISCOPT): run;
NOTE: There were 9 observations read from the data set WORK.CONSTRAI.
NOTE: The PROCEDURE PRINT printed page 20.
NOTE: PROCEDURE PRINT used:
      real time      0.00 seconds
      cpu time       0.00 seconds

```

```

MPRINT(RUNCOPT): proc transpose data=constrai(keep=ticker lower) out=l;
MPRINT(RUNCOPT): id ticker;
NOTE: There were 9 observations read from the data set WORK.CONSTRAI.
NOTE: The data set WORK.L has 1 observations and 10 variables.
NOTE: PROCEDURE TRANSPOSE used:
      real time      0.01 seconds
      cpu time       0.00 seconds

```

```

MPRINT(RUNCOPT): proc transpose data=constrai(keep=ticker upper) out=u;
MPRINT(RUNCOPT): id ticker;
NOTE: There were 9 observations read from the data set WORK.CONSTRAI.

```

NOTE: The data set WORK.U has 1 observations and 10 variables.

NOTE: PROCEDURE TRANSPOSE used:

real time	0.01 seconds
cpu time	0.01 seconds

```

MPRINT(RUNCOPT): data l;
MPRINT(RUNCOPT): set l;
MPRINT(RUNCOPT): _name_ = "LOWER";
MPRINT(RUNCOPT): _type_ = "lowerbd";

```

NOTE: There were 1 observations read from the data set WORK.L.

NOTE: The data set WORK.L has 1 observations and 11 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.00 seconds

```

MPRINT(RUNCOPT): data u;
MPRINT(RUNCOPT): set u;
MPRINT(RUNCOPT): _name_ = "UPPER";
MPRINT(RUNCOPT): _type_ = "upperbd";
MPRINT(RUNCOPT): run;

```

NOTE: There were 1 observations read from the data set WORK.U.

NOTE: The data set WORK.U has 1 observations and 11 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.01 seconds

```

MPRINT(RUNCOPT): data pf.inquad;
MPRINT(RUNCOPT): set pf.inquad(wher=(_name_ not in ("LOWER","UPPER"))); l u;
MPRINT(RUNCOPT): run;

```

NOTE: There were 24 observations read from the data set PF.INQUAD.

WHERE \_name\_ not in ('LOWER', 'UPPER');

NOTE: There were 1 observations read from the data set WORK.L.

NOTE: There were 1 observations read from the data set WORK.U.

NOTE: The data set PF.INQUAD has 26 observations and 12 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.01 seconds

```

...quad call 2 .
MPRINT(CALLNLP): proc nlp inquad=pf.inquad outest=toutquad cov=2 ;
MPRINT(CALLNLP): min;
MPRINT(CALLNLP): parms CPO FBNDX FCNTX FGRIX FLPSX FMAGX FOSFX FUSEX _GIC_ ;
MPRINT(CALLNLP): run;

```

NOTE: Your code contains 0 program statements.

NOTE: Analytic derivatives are used with a quadratic optimization problem.

WARNING: A total of 1 identical linear constraints are deleted.

NOTE: Initial value of parameter CPO is set randomly to 0.2223636891.

NOTE: Initial value of parameter FCNTX is set randomly to 0.6621284576.

NOTE: Initial value of parameter FBNDX is set randomly to 0.1293954403.

NOTE: Initial value of parameter FGRIX is set randomly to 0.6245803752.

NOTE: Initial value of parameter FLPSX is set randomly to 0.0653572819.  
 NOTE: Initial value of parameter FMAGX is set randomly to 0.9262610338.  
 NOTE: Initial value of parameter FOSFX is set randomly to 0.7493494473.  
 NOTE: Initial value of parameter FUSEX is set randomly to 0.310626859.  
 NOTE: Initial value of parameter \_GIC\_ is set randomly to 0.0971887168.  
 NOTE: Initial point was changed to be feasible for boundary and linear constraints.  
 NOTE: ABSGCONV convergence criterion satisfied.  
 NOTE: There were 26 observations read from the data set PF.INQUAD.  
 NOTE: The data set WORK.TOUTQUAD has 62 observations and 14 variables.  
 NOTE: The PROCEDURE NLP printed pages 21-24.  
 NOTE: PROCEDURE NLP used:  
     real time      0.15 seconds  
     cpu time      0.07 seconds

```

MPRINT(CALLNLP):  proc sql noprint;
MPRINT(CALLNLP):  select _rhs_ into :objfnval from toutquad where _type_ = 'PARMS';
MPRINT(RUNCOPT):  ;
NOTE: PROCEDURE SQL used:
      real time      0.00 seconds
      cpu time      0.00 seconds

```

```

MPRINT(Q2CTW):  proc sql;
MPRINT(Q2CTW):  select _rhs_ into :objfnval from toutquad where _type_ = 'PARMS';
NOTE: The PROCEDURE SQL printed page 25.
NOTE: PROCEDURE SQL used:
      real time      0.00 seconds
      cpu time      0.01 seconds

```

```

MPRINT(Q2CTW):  data _qctw(drop=_type_ _rhs_);
MPRINT(Q2CTW):  format cticker $8.;
MPRINT(Q2CTW):  set toutquad(drop=_name_ _iter_ _tech_ where=(_type_='PARMS'));
MPRINT(Q2CTW):  cticker = "PARMS";
MPRINT(Q2CTW):  call symput("OBJFNVAL",put(_rhs_.,best.));
MPRINT(Q2CTW):  if _rhs_ ne . then do;
MPRINT(Q2CTW):  output;
MPRINT(Q2CTW):  call symput("OSTATUS", "0");
MPRINT(Q2CTW):  end;
MPRINT(Q2CTW):  else do;
MPRINT(Q2CTW):  call symput("OSTATUS", "1");
MPRINT(Q2CTW):  end;
MPRINT(Q2CTW):  run;

```

NOTE: There were 1 observations read from the data set WORK.TOUTQUAD.  
 WHERE \_type\_='PARMS';  
 NOTE: The data set WORK.\_QCTW has 1 observations and 10 variables.  
 NOTE: DATA statement used:  
     real time      0.02 seconds  
     cpu time      0.02 seconds

```

MPRINT(Q2CTW):  proc transpose data=_qctw out=_qctw(rename=(_name_=cticker coll=wtg));
MPRINT(Q2CTW):  by cticker;
MPRINT(Q2CTW):  run;
NOTE: There were 1 observations read from the data set WORK._QCTW.

```

NOTE: The data set WORK.\_QCTW has 9 observations and 3 variables.

NOTE: PROCEDURE TRANSPOSE used:

real time	0.01 seconds
cpu time	0.02 seconds

```

MPRINT(RUNCOPT):      ; data _null_;
MPRINT(DIST2MIN):      ; retain distance 0;
MPRINT(DIST2MIN):      ; set _qctw end=eof;
MPRINT(DIST2MIN):      ; if wgt < 0.05 then do;
MPRINT(DIST2MIN):      ;   if wgt < 0.05/2 then distance = distance + wgt;
MPRINT(DIST2MIN):      ;   else distance = distance + 0.05 - wgt;
MPRINT(DIST2MIN):      ; end;
MPRINT(DIST2MIN):      ; if eof then call symput("DIST2MIN",put(distance,8.6));
MPRINT(DIST2MIN):      ; run;

```

NOTE: There were 9 observations read from the data set WORK.\_QCTW.

NOTE: DATA statement used:

real time	0.00 seconds
cpu time	0.01 seconds

```

MPRINT(RUNCOPT):      ;
MPRINT(RUNCOPT):      ; proc sql noprint;
MPRINT(RUNCOPT):      ;   select ticker,wgt into :hitck, :maxlf from _qctw having wgt = (select max(wgt) from _qctw where wgt < 0.05 -
MPRINT(RUNCOPT):      ;   1E-8 and wgt > 1E-8);
NOTE: No rows were selected.
MPRINT(RUNCOPT):      ;   select ticker,wgt into :lowtick, :mingz from _qctw having wgt = (select min(wgt) from _qctw where wgt > 1E-8 and
MPRINT(RUNCOPT):      ;   wgt < 0.05 - 1E-8);
NOTE: No rows were selected.
MPRINT(DISCOPT):      ;
...***** force low = 0.2499677559 vs potential 0.249768 on quadcall 2 markx*****
NOTE: PROCEDURE SQL used:
real time      0.01 seconds
cpu time       0.02 seconds

```

```

MPRINT(DISCOPT):      data pf.outquad;
MPRINT(DISCOPT):      set toutquad;
MPRINT(DISCOPT):      run;

```

NOTE: There were 62 observations read from the data set WORK.TOUTQUAD.

NOTE: The data set PF.OUTQUAD has 62 observations and 14 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.02 seconds

```
MPRINT(POPSTK):      proc sql noprint;
```

MPRINT(POPSTK): create table \_conpos as select so.objval, so.dist2min, so.opt, so.pos, count(\*) as cnt from stack s, stacko so where s.pos=so.pos and s.upper ne 0 and s.lower ne 0.05 group by so.dist2min, so.objval, so.opt, so.pos order by so.dist2min, so.objval, so.opt, so.pos;

NOTE: Table WORK.\_CONPOS created, with 2 rows and 5 columns.

NOTE: PROCEDURE SQL used:

real time	0.02 seconds
cpu time	0.02 seconds

```

MPRINT(POPSTK):  proc sql;
MPRINT(POPSTK):  select count(*) into :cntent from _conpos;
NOTE: The PROCEDURE SQL printed page 26.
NOTE: PROCEDURE SQL used:
      real time      0.00 seconds
      cpu time       0.00 seconds

```

```

MPRINT(POPSTK):  data _null_;
MPRINT(POPSTK):  set _conpos(obs=1);
MPRINT(POPSTK):  call symput("minpos",trim(left(put(pos,8)))));
MPRINT(POPSTK):  run;

```

```

NOTE: There were 1 observations read from the data set WORK._CONPOS.
NOTE: DATA statement used:
      real time      0.00 seconds
      cpu time       0.00 seconds

```

```

MPRINT(POPSTK):  data constrai stack;
MPRINT(POPSTK):  set stack;
MPRINT(POPSTK):  if pos = 2 then do;
MPRINT(POPSTK):  output constrai;
MPRINT(POPSTK):  end;
MPRINT(POPSTK):  else do;
MPRINT(POPSTK):  if pos > 2 then pos = pos - 1;
MPRINT(POPSTK):  output stack;
MPRINT(POPSTK):  end;
MPRINT(POPSTK):  run;

```

```

NOTE: There were 20 observations read from the data set WORK.STACK.
NOTE: The data set WORK.CONSTRAI has 10 observations and 5 variables.
NOTE: The data set WORK.STACK has 10 observations and 5 variables.
NOTE: DATA statement used:
      real time      0.02 seconds
      cpu time       0.00 seconds

```

```

MPRINT(POPSTK):  data stacko;
MPRINT(POPSTK):  set stacko;
MPRINT(POPSTK):  if pos = 2 then do;
MPRINT(POPSTK):  call symput("objval",objval);
MPRINT(POPSTK):  put "..popping " ticker ":" objval "at " prev " -> " cur "out of 2" ;
MPRINT(POPSTK):  end;
MPRINT(POPSTK):  else do;
MPRINT(POPSTK):  if pos > 2 then pos = pos - 1;
MPRINT(POPSTK):  output;
MPRINT(POPSTK):  end;
MPRINT(POPSTK):  run;

```

```

NOTE: Numeric values have been converted to character values at the places given by: (Line):(Column).
      11788:180
      ..popping FCNTX : (0.2497684956 at 0.040974 ) -> 0.05 out of 2
NOTE: There were 2 observations read from the data set WORK.STACKO.
NOTE: The data set WORK.STACKO has 1 observations and 7 variables.
NOTE: DATA statement used:

```

```

real time      0.01 seconds
cpu time       0.01 seconds

```

```

MPRINT(DISCOPT): ;
MPRINT(DISCOPT): data _null_;
MPRINT(DISCOPT): title "Iteration 2 minobjfn = 0.2499677559 last objfnval = 0.2499677559 ";
MPRINT(DISCOPT): run;

```

NOTE: DATA statement used:

```

real time      0.00 seconds
cpu time       0.00 seconds

```

```

MPRINT(RUNCOPT): proc transpose data=constrai(keep=ticker lower) out=l;
MPRINT(RUNCOPT): id ticker;

```

NOTE: There were 10 observations read from the data set WORK.CONSTRAI.

NOTE: The data set WORK.L has 1 observations and 11 variables.

NOTE: PROCEDURE TRANSPOSE used:

```

real time      0.01 seconds
cpu time       0.00 seconds

```

```

MPRINT(RUNCOPT): proc transpose data=constrai(keep=ticker upper) out=u;
MPRINT(RUNCOPT): id ticker;

```

NOTE: There were 10 observations read from the data set WORK.CONSTRAI.

NOTE: The data set WORK.U has 1 observations and 11 variables.

NOTE: PROCEDURE TRANSPOSE used:

```

real time      0.01 seconds
cpu time       0.00 seconds

```

```

MPRINT(RUNCOPT): data l;
MPRINT(RUNCOPT): set l;
MPRINT(RUNCOPT): _name_ = "LOWER";
MPRINT(RUNCOPT): _type_ = "lowerbd";

```

NOTE: There were 1 observations read from the data set WORK.L.

NOTE: The data set WORK.L has 1 observations and 12 variables.

NOTE: DATA statement used:

```

real time      0.01 seconds
cpu time       0.00 seconds

```

```

MPRINT(RUNCOPT): data u;
MPRINT(RUNCOPT): set u;
MPRINT(RUNCOPT): _name_ = "UPPER";
MPRINT(RUNCOPT): _type_ = "upperbd";
MPRINT(RUNCOPT): run;

```

NOTE: There were 1 observations read from the data set WORK.U.

NOTE: The data set WORK.U has 1 observations and 12 variables.

NOTE: DATA statement used:

```

real time      0.02 seconds
cpu time       0.00 seconds

```

```

MPRINT(RUNCOPT): data pf.inquad;
MPRINT(RUNCOPT): set pf.inquad(where=(name_ not in ("LOWER", "UPPER"))) 1 u;
MPRINT(RUNCOPT): run;

```

NOTE: There were 24 observations read from the data set PF.INQUAD.

```
WHERE name_ not in ('LOWER', 'UPPER');
```

NOTE: There were 1 observations read from the data set WORK.L.

NOTE: There were 1 observations read from the data set WORK.U.

NOTE: The data set PF.INQUAD has 26 observations and 12 variables.

NOTE: DATA statement used:

```

real time      0.01 seconds
cpu time       0.02 seconds

```

```
..quad call 3 .
```

```
MPRINT(CALLNLP): proc nlp inquad=pf.inquad outest=toutquad cov=2 ;
```

```
MPRINT(CALLNLP): min;
```

```
MPRINT(CALLNLP): parms CPO FENDX FCNTX FGRIX FLPSX FMAGX FOSFX FUSEX _GIC_ ;
```

```
MPRINT(CALLNLP): run;
```

NOTE: Your code contains 0 program statements.

NOTE: Analytic derivatives are used with a quadratic optimization problem.

WARNING: A total of 1 identical linear constraints are deleted.

NOTE: Initial value of parameter CPO is set randomly to 0.4073262589.

NOTE: Initial value of parameter FENDX is set randomly to 0.6322171733.

NOTE: Initial value of parameter FCNTX is set randomly to 0.5292197464.

NOTE: Initial value of parameter FGRIX is set randomly to 0.8839790206.

NOTE: Initial value of parameter FLPSX is set randomly to 0.9869598597.

NOTE: Initial value of parameter FMAGX is set randomly to 0.8955383836.

NOTE: Initial value of parameter FOSFX is set randomly to 0.2923286205.

NOTE: Initial value of parameter FUSEX is set randomly to 0.8423185818.

NOTE: Initial value of parameter \_GIC\_ is set randomly to 0.146982743.

NOTE: Initial point was changed to be feasible for boundary and linear constraints.

NOTE: ABSGCONV convergence criterion satisfied.

NOTE: There were 26 observations read from the data set PF.INQUAD.

NOTE: The data set WORK.TOUTQUAD has 62 observations and 14 variables.

NOTE: The PROCEDURE NLP printed pages 27-30.

NOTE: PROCEDURE NLP used:

```

real time      0.12 seconds
cpu time       0.06 seconds

```

```
MPRINT(CALLNLP): proc sql noprint;
```

```
MPRINT(CALLNLP): select _rhs_ into :objfnval from toutquad where _type_ = 'PARMS';
```

```
MPRINT(RUNCOPT): ;
```

NOTE: PROCEDURE SQL used:

```

real time      0.00 seconds
cpu time       0.00 seconds

```

```
MPRINT(Q2CTW): proc sql;
```

```
MPRINT(Q2CTW): select _rhs_ into :objfnval from toutquad where _type_ = 'PARMS';
```

NOTE: The PROCEDURE SQL printed page 31.

NOTE: PROCEDURE SQL used:

```

real time      0.00 seconds
cpu time       0.01 seconds

```



```

MPRINT(Q2CTW): data _qctw(drop=_type_ _rhs_);
MPRINT(Q2CTW): format cticker $8.;
MPRINT(Q2CTW): set toutquad(drop=_name_ _iter_ _tech_ where=(_type_='PARMS'));
MPRINT(Q2CTW): cticker = "PARMS";
MPRINT(Q2CTW): call symput("OBJFVAL",put(_rhs_,best.));
MPRINT(Q2CTW): if _rhs_ ne . then do;
MPRINT(Q2CTW): output;
MPRINT(Q2CTW): call symput("OSTATUS","0");
MPRINT(Q2CTW): end;
MPRINT(Q2CTW): else do;
MPRINT(Q2CTW): call symput("OSTATUS","1");
MPRINT(Q2CTW): end;
MPRINT(Q2CTW): run;

```

NOTE: There were 1 observations read from the data set WORK.TOUTQUAD.

WHERE \_type\_='PARMS';

NOTE: The data set WORK.\_QCTW has 1 observations and 10 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.01 seconds

```

MPRINT(Q2CTW): proc transpose data=_qctw out=_qctw(rename=(_name_=ticker coll=wtg));
MPRINT(Q2CTW): by cticker;
MPRINT(Q2CTW): run;

```

NOTE: There were 1 observations read from the data set WORK.\_QCTW.

NOTE: The data set WORK.\_QCTW has 9 observations and 3 variables.

NOTE: PROCEDURE TRANSPOSE used:

real time	0.02 seconds
cpu time	0.01 seconds

```

MPRINT(RUNCOPT): ;
MPRINT(DIST2MIN): data _null_;
MPRINT(DIST2MIN): retain distance 0;
MPRINT(DIST2MIN): set _qctw end=eof;
MPRINT(DIST2MIN): if wgt < 0.05 then do;
MPRINT(DIST2MIN): if wgt < 0.05/2 then distance = distance + wgt;
MPRINT(DIST2MIN): else distance = distance + 0.05 - wgt;
MPRINT(DIST2MIN): end;
MPRINT(DIST2MIN): if eof then call symput("DIST2MIN",put(distance,8.6));
MPRINT(DIST2MIN): run;

```

NOTE: There were 9 observations read from the data set WORK.\_QCTW.

NOTE: DATA statement used:

real time	0.00 seconds
cpu time	0.01 seconds

```

MPRINT(RUNCOPT): ;
MPRINT(RUNCOPT): proc sql noprint;
MPRINT(RUNCOPT): select ticker,wtg into :hitick, :maxlf from _qctw having wgt = (select max(wgt) from _qctw where wgt < 0.05 -
1E-8 and wgt > 1E-8);
NOTE: No rows were selected.
MPRINT(RUNCOPT): select ticker,wtg into :lowtick, :mingz from _qctw having wgt = (select min(wgt) from _qctw where wgt > 1E-8 and
wtg < 0.05 - 1E-8);

```

NOTE: No rows were selected.

MPRINT(DISCOPT): ;

NOTE: PROCEDURE SQL used:

real time	0.02 seconds
cpu time	0.02 seconds

MPRINT(POPSTK): proc sql noprint;

MPRINT(POPSTK): create table \_conpos as select so.objval, so.dist2min, so.opt, so.pos, count(\*) as cnt from stack s, stacko so where s.pos=so.pos and s.upper ne 0 and s.lower ne 0.05 group by so.dist2min, so.objval, so.opt, so.pos order by so.dist2min, so.objval, so.opt, so.pos;

NOTE: Table WORK.\_CONPOS created, with 1 rows and 5 columns.

NOTE: PROCEDURE SQL used:

real time	0.02 seconds
cpu time	0.01 seconds

MPRINT(POPSTK): proc sql;

MPRINT(POPSTK): select count(\*) into :cntcnt from \_conpos;

NOTE: The PROCEDURE SQL printed page 32.

NOTE: PROCEDURE SQL used:

real time	0.00 seconds
cpu time	0.01 seconds

MPRINT(POPSTK): data \_null\_;

MPRINT(POPSTK): set \_conpos(obs=1);

MPRINT(POPSTK): call symput('minpos',trim(left(put(pos,8))));

MPRINT(POPSTK): run;

NOTE: There were 1 observations read from the data set WORK.\_CONPOS.

NOTE: DATA statement used:

real time	0.00 seconds
cpu time	0.01 seconds

MPRINT(POPSTK): data constrai stack;

MPRINT(POPSTK): set stack;

MPRINT(POPSTK): if pos = 1 then do;

MPRINT(POPSTK): output constrai;

MPRINT(POPSTK): end;

MPRINT(POPSTK): else do;

MPRINT(POPSTK): if pos > 1 then pos = pos - 1;

MPRINT(POPSTK): output stack;

MPRINT(POPSTK): end;

MPRINT(POPSTK): run;

NOTE: There were 10 observations read from the data set WORK.STACK.

NOTE: The data set WORK.CONSTRAI has 10 observations and 5 variables.

NOTE: The data set WORK.STACK has 0 observations and 5 variables.

NOTE: DATA statement used:

real time	0.03 seconds
cpu time	0.02 seconds

MPRINT(POPSTK): data stacko;

MPRINT(POPSTK): set stacko;

```

MPRINT(POPSTK) : if pos = 1 then do;
MPRINT(POPSTK) :   call symput("sobjval",objval);
MPRINT(POPSTK) : put "popping " ticker ":(=" objval "at " prev ") -> " cur "out of 1" ;
MPRINT(POPSTK) : end;
MPRINT(POPSTK) : else do;
MPRINT(POPSTK) :   if pos > 1 then pos = pos - 1;
MPRINT(POPSTK) :   output;
MPRINT(POPSTK) : end;
MPRINT(POPSTK) : run;

NOTE: Numeric values have been converted to character values at the places given by: (Line):(Column).
      11788:180
      .popping FCNTX : (0.2497684956 at 0.040974 ) -> 0 out of 1
NOTE: There were 1 observations read from the data set WORK.STACKO.
NOTE: The data set WORK.STACKO has 0 observations and 7 variables.
NOTE: DATA statement used:
      real time      0.01 seconds
      cpu time       0.01 seconds

MPRINT(DISCOPT) :
MPRINT(DISCOPT) :   data _null_;
MPRINT(DISCOPT) :   title "Iteration 3 minobjfn = 0.2499677559 last objfnval = 0.2499677559 ";
MPRINT(DISCOPT) : run;

NOTE: DATA statement used:
      real time      0.00 seconds
      cpu time       0.00 seconds

MPRINT(RUNCOPT) : proc transpose data=constrai(keep=ticker lower) out=l;
MPRINT(RUNCOPT) : id ticker;

NOTE: There were 10 observations read from the data set WORK.CONSTRAI.
NOTE: The data set WORK.L has 1 observations and 11 variables.
NOTE: PROCEDURE TRANSPOSE used:
      real time      0.01 seconds
      cpu time       0.01 seconds

MPRINT(RUNCOPT) : proc transpose data=constrai(keep=ticker upper) out=u;
MPRINT(RUNCOPT) : id ticker;

NOTE: There were 10 observations read from the data set WORK.CONSTRAI.
NOTE: The data set WORK.U has 1 observations and 11 variables.
NOTE: PROCEDURE TRANSPOSE used:
      real time      0.01 seconds
      cpu time       0.00 seconds

MPRINT(RUNCOPT) : data l;
MPRINT(RUNCOPT) : set l;
MPRINT(RUNCOPT) :   _name_ = "LOWER";
MPRINT(RUNCOPT) :   _type_ = "lowerbd";

NOTE: There were 1 observations read from the data set WORK.L.
NOTE: The data set WORK.L has 1 observations and 12 variables.
NOTE: DATA statement used:

```

real time 0.01 seconds  
cpu time 0.02 seconds

```
MPRINT(RUNCOPT): data u;
MPRINT(RUNCOPT): set u;
MPRINT(RUNCOPT): _name_ = "UPPER";
MPRINT(RUNCOPT): _type_ = "upperbd";
MPRINT(RUNCOPT): run;
```

NOTE: There were 1 observations read from the data set WORK.U.  
NOTE: The data set WORK.U has 1 observations and 12 variables.  
NOTE: DATA statement used:  
real time 0.01 seconds  
cpu time 0.02 seconds

```
MPRINT(RUNCOPT): data pf.inquad;
MPRINT(RUNCOPT): set pf.inquad(where=(name_not in ("LOWER","UPPER"))); 1 u;
MPRINT(RUNCOPT): run;
```

NOTE: There were 24 observations read from the data set PF.INQUAD.  
NOTE: WHERE \_name\_ not in ('LOWER', 'UPPER');  
NOTE: There were 1 observations read from the data set WORK.L.  
NOTE: There were 1 observations read from the data set WORK.U.  
NOTE: The data set PF.INQUAD has 26 observations and 12 variables.  
NOTE: DATA statement used:  
real time 0.02 seconds  
cpu time 0.03 seconds

```
.quad call 4 .
MPRINT(CALLNLP): proc nlp inquad=pf.inquad outest=toutquad cov=2 ;
MPRINT(CALLNLP): min;
MPRINT(CALLNLP): parms CPO FBNDX FCNTX FGRIX FLPSX FMAGX FOSFX _GIC_ ;
MPRINT(CALLNLP): run;
```

NOTE: Your code contains 0 program statements.  
NOTE: Analytic derivatives are used with a quadratic optimization problem.  
WARNING: A total of 1 identical linear constraints are deleted.  
NOTE: Initial value of parameter CPO is set randomly to 0.4073262589.  
NOTE: Initial value of parameter FBNDX is set randomly to 0.6322171733.  
NOTE: Initial value of parameter FCNTX is set randomly to 0.5292197464.  
NOTE: Initial value of parameter FGRIX is set randomly to 0.8839790206.  
NOTE: Initial value of parameter FLPSX is set randomly to 0.9869598597.  
NOTE: Initial value of parameter FMAGX is set randomly to 0.8955383836.  
NOTE: Initial value of parameter FOSFX is set randomly to 0.2923286205.  
NOTE: Initial value of parameter FUSEX is set randomly to 0.8423185818.  
NOTE: Initial value of parameter \_GIC\_ is set randomly to 0.146982743.  
NOTE: Initial point was changed to be feasible for boundary and linear constraints.  
NOTE: ABSGCONV convergence criterion satisfied.  
NOTE: There were 26 observations read from the data set PF.INQUAD.  
NOTE: The data set WORK.TOUTQUAD has 62 observations and 14 variables.  
NOTE: The PROCEDURE NLP printed pages 33-36.  
NOTE: PROCEDURE NLP used:  
real time 0.14 seconds  
cpu time 0.06 seconds

```

MPRINT(CALLNLFP):  proc sql noprint;
MPRINT(CALLNLFP):  select _rhs_ into :objfnval from toutquad where _type_ = 'PARMS';
MERINT(RUNCOPT):  ;
NOTE: PROCEDURE SQL used:
      real time      0.00 seconds
      cpu time       0.01 seconds

```

```

MPRINT(Q2CTW):  proc sql;
MPRINT(Q2CTW):  select _rhs_ into :objfnval from toutquad where _type_ = 'PARMS';
NOTE: The PROCEDURE SQL printed page 37.
NOTE: PROCEDURE SQL used:
      real time      0.00 seconds
      cpu time       0.01 seconds

```

```

MPRINT(Q2CTW):  data _qctw(drop=_type_ _rhs_);
MPRINT(Q2CTW):  format cticker $8.;
MPRINT(Q2CTW):  set toutquad(drop= _name_ _iter_ _tech_ where=(_type_='PARMS'));
MPRINT(Q2CTW):  cticker = "PARMS";
MPRINT(Q2CTW):  call symput("OBJFNVAL",put(_rhs_,best.));
MPRINT(Q2CTW):  if _rhs_ ne . then do;
MPRINT(Q2CTW):  output;
MPRINT(Q2CTW):  call symput("OSTATUS", "0");
MPRINT(Q2CTW):  end;
MPRINT(Q2CTW):  else do;
MPRINT(Q2CTW):  call symput("OSTATUS", "1");
MPRINT(Q2CTW):  end;
MPRINT(Q2CTW):  run;

```

NOTE: There were 1 observations read from the data set WORK.TOUTQUAD.

WHERE \_type\_='PARMS';

NOTE: The data set WORK.\_QCTW has 1 observations and 10 variables.

NOTE: DATA statement used:

```

      real time      0.02 seconds
      cpu time       0.02 seconds

```

```

MPRINT(Q2CTW):  proc transpose data=_qctw out=_qctw(rename=(_name_=cticker coll=wtg));
MPRINT(Q2CTW):  by cticker;
MPRINT(Q2CTW):  run;

```

NOTE: There were 1 observations read from the data set WORK.\_QCTW.

NOTE: The data set WORK.\_QCTW has 9 observations and 3 variables.

NOTE: PROCEDURE TRANSPOSE used:

```

      real time      0.02 seconds
      cpu time       0.01 seconds

```

```

MPRINT(RUNCOPT):  ;
MPRINT(DIST2MIN):  data _null_;
MPRINT(DIST2MIN):  retain distance 0;
MPRINT(DIST2MIN):  set _qctw end=eof;
MPRINT(DIST2MIN):  if wgt < 0.05 then do;
MPRINT(DIST2MIN):  if wgt < 0.05/2 then distance = distance + wgt;
MPRINT(DIST2MIN):  else distance = distance + 0.05 - wgt;
MPRINT(DIST2MIN):  end;

```

```

MPRINT(DIST2MIN):  if eof then call symput("DIST2MIN",put(distance,8.6));
MPRINT(DIST2MIN):  run;

```

NOTE: There were 9 observations read from the data set WORK.\_QCTW.

NOTE: DATA statement used:

```

real time      0.00 seconds
cpu time       0.01 seconds

```

```

MPRINT(RUNCOPT):  ;
MPRINT(RUNCOPT):  proc sql noprint;
MPRINT(RUNCOPT):  select ticker,wgt into :hitck, :maxlf from _qctw having wgt = (select max(wgt) from _qctw where wgt < 0.05 -
1E-8 and wgt > 1E-8);

```

NOTE: No rows were selected.

```

MPRINT(RUNCOPT):  select ticker,wgt into :lowtick, :mingz from _qctw having wgt = (select min(wgt) from _qctw where wgt > 1E-8 and
wgt < 0.05 - 1E-8);

```

NOTE: No rows were selected.

```

MPRINT(DISCOPT):  ;

```

NOTE: PROCEDURE SQL used:

```

real time      0.01 seconds
cpu time       0.02 seconds

```

```

MPRINT(DISCOPT):  data toutquad;
MPRINT(DISCOPT):  set pf.outquad;
MPRINT(DISCOPT):  run;

```

NOTE: There were 62 observations read from the data set PF.OUTQUAD.

NOTE: The data set WORK.TOUTQUAD has 62 observations and 14 variables.

NOTE: DATA statement used:

```

real time      0.01 seconds
cpu time       0.02 seconds

```

Finished after 4 calls to quad, obj=0.2499677559 markx

```

MPRINT(OPTQ_CTW):  ;

```

```

MPRINT(Q2CTW):  proc sql;

```

```

MPRINT(Q2CTW):  select _rhs_ into :objfnval from pf.outquad where _type_ = 'PARMS';
NOTE: The PROCEDURE SQL printed page 38.

```

NOTE: PROCEDURE SQL used:

```

real time      0.00 seconds
cpu time       0.01 seconds

```

```

MPRINT(Q2CTW):  data _out_ctw(drop=_type_ _rhs_);
MPRINT(Q2CTW):  format cticker $8.;
MPRINT(Q2CTW):  set pf.outquad(drop=_name_ _iter_ _tech_ where=( _type_ = 'PARMS' ));
MPRINT(Q2CTW):  cticker = "PF000021";
MPRINT(Q2CTW):  call symput("OBJFNVAL",put(_rhs_,best.));
MPRINT(Q2CTW):  if _rhs_ ne . then do;
MPRINT(Q2CTW):  output;
MPRINT(Q2CTW):  call symput("OSTATUS","0");
MPRINT(Q2CTW):  end;
MPRINT(Q2CTW):  else do;
MPRINT(Q2CTW):  call symput("OSTATUS","1");
MPRINT(Q2CTW):  end;
MPRINT(Q2CTW):  run;

```

```

NOTE: There were 1 observations read from the data set PF.OUTQUAD.
      WHERE _type_='PARMS';
NOTE: The data set WORK._OUT_CTW has 1 observations and 10 variables.
NOTE: DATA statement used:
      real time      0.02 seconds
      cpu time       0.01 seconds

MPRINT(Q2CTW):  proc transpose data=_out_ctw out=_out_ctw(rename=(_name_=ticker coll=wgt));
MPRINT(Q2CTW):  by ticker;
MPRINT(Q2CTW):  run;

NOTE: There were 1 observations read from the data set WORK._OUT_CTW.
NOTE: The data set WORK._OUT_CTW has 9 observations and 3 variables.
NOTE: PROCEDURE TRANSPOSE used:
      real time      0.01 seconds
      cpu time       0.00 seconds

MPRINT(OPTO_CTW):  ;
MPRINT(OPTO_CTW):  data pf.ctw;
MPRINT(OPTO_CTW):  length cticker ticker $8;
MPRINT(OPTO_CTW):  set _out_ctw;
MPRINT(OPTO_CTW):  run;

NOTE: There were 9 observations read from the data set WORK._OUT_CTW.
NOTE: The data set PF.CTW has 9 observations and 3 variables.
NOTE: DATA statement used:
      real time      0.02 seconds
      cpu time       0.01 seconds

MPRINT(OPTO_PF):  ;
MPRINT(CTW2WHOLE_PCT):  data finals;
MPRINT(CTW2WHOLE_PCT):  set pf.ctw(drop=cticker);
MPRINT(CTW2WHOLE_PCT):  wgt=round(wgt,.0001);
MPRINT(CTW2WHOLE_PCT):  run;

NOTE: There were 9 observations read from the data set PF.CTW.
NOTE: The data set WORK.FINALS has 9 observations and 2 variables.
NOTE: DATA statement used:
      real time      0.01 seconds
      cpu time       0.00 seconds

MPRINT(CTW2WHOLE_PCT):  proc sort data=finals;
MPRINT(CTW2WHOLE_PCT):  by ticker;

NOTE: There were 9 observations read from the data set WORK.FINALS.
NOTE: The data set WORK.FINALS has 9 observations and 2 variables.
NOTE: PROCEDURE SORT used:
      real time      0.01 seconds
      cpu time       0.00 seconds

MPRINT(CTW2WHOLE_PCT):  data aret;
MPRINT(CTW2WHOLE_PCT):  set pf.mdl_dtt;
MPRINT(CTW2WHOLE_PCT):  run;

```

NOTE: There were 36 observations read from the data set PF.MDL\_DTT.  
 NOTE: The data set WORK.ARET has 36 observations and 12 variables.

NOTE: DATA statement used:  
     real time        0.01 seconds  
     cpu time         0.01 seconds

```
MPRINT(W2LTRAN):  proc transpose data=pf.mdl_dtt out=_c2dtr(keep = date ticker coll rename=(coll=return)) name=ticker;
MPRINT(W2LTRAN):  by date;
MPRINT(W2LTRAN):  run;
```

NOTE: There were 36 observations read from the data set PF.MDL\_DTT.  
 NOTE: The data set WORK.\_C2DTR has 396 observations and 3 variables.

NOTE: PROCEDURE TRANSPOSE used:  
     real time        0.02 seconds  
     cpu time         0.01 seconds

```
MPRINT(W2LTRAN):  data _c2dtr;
MPRINT(W2LTRAN):  length ticker $8;
MPRINT(W2LTRAN):  set _c2dtr(where=(return ne .));
MPRINT(W2LTRAN):  run;
```

NOTE: There were 396 observations read from the data set WORK.\_C2DTR.  
 WHERE return not = .;

NOTE: The data set WORK.\_C2DTR has 396 observations and 3 variables.

NOTE: DATA statement used:  
     real time        0.01 seconds  
     cpu time         0.02 seconds

```
MPRINT(DTT2DTR):  ;
MPRINT(CTW2WHOLE_PCT):  ;
MPRINT(CTW2WHOLE_PCT):  proc sql noprint;
MPRINT(CTW2WHOLE_PCT):  create table preset as select a.ticker,a.wgt*100 as wgt, std(return) as std from finals a, _c2dtr b where
a.ticker=b.ticker group by a.ticker,wgt order by ticker;
NOTE: Table WORK.PRESET created, with 9 rows and 3 columns.
```

NOTE: PROCEDURE SQL used:  
     real time        0.03 seconds  
     cpu time         0.02 seconds

```
MPRINT(CTW2WHOLE_PCT):  data preset;
MPRINT(CTW2WHOLE_PCT):  set preset;
MPRINT(CTW2WHOLE_PCT):  if ( wgt ne int(wgt) ) then do;
MPRINT(CTW2WHOLE_PCT):  lowerbd = int(wgt);
MPRINT(CTW2WHOLE_PCT):  upperbd = int(wgt) + 1 ;
MPRINT(CTW2WHOLE_PCT):  end;
MPRINT(CTW2WHOLE_PCT):  else do;
MPRINT(CTW2WHOLE_PCT):  lowerbd = wgt;
MPRINT(CTW2WHOLE_PCT):  upperbd = wgt;
MPRINT(CTW2WHOLE_PCT):  end;
MPRINT(CTW2WHOLE_PCT):  integer=1;
MPRINT(CTW2WHOLE_PCT):  wstd= std*wgt;
MPRINT(CTW2WHOLE_PCT):  run;
```



NOTE: There were 9 observations read from the data set WORK.PRESET.  
 NOTE: The data set WORK.PRESET has 9 observations and 7 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.01 seconds

MPRINT(CTW2WHOLE\_PCT): proc means data=preSet noprint;

MPRINT(CTW2WHOLE\_PCT): var wstd;

MPRINT(CTW2WHOLE\_PCT): output out=\_xsum sum=std;

NOTE: There were 9 observations read from the data set WORK.PRESET.  
 NOTE: The data set WORK.\_XSUM has 1 observations and 3 variables.

NOTE: PROCEDURE MEANS used:

real time	0.03 seconds
cpu time	0.02 seconds

MPRINT(CTW2WHOLE\_PCT): data \_xsum;

MPRINT(CTW2WHOLE\_PCT): length ticker \$10;

MPRINT(CTW2WHOLE\_PCT): set \_xsum;

MPRINT(CTW2WHOLE\_PCT): ticker = "SUM";

MPRINT(CTW2WHOLE\_PCT): wgt = -1;

MPRINT(CTW2WHOLE\_PCT): lowerbd=-1;

MPRINT(CTW2WHOLE\_PCT): upperbd=-1;

MPRINT(CTW2WHOLE\_PCT): integer=1;

MPRINT(CTW2WHOLE\_PCT): wstd=.;

NOTE: There were 1 observations read from the data set WORK.\_XSUM.

NOTE: The data set WORK.\_XSUM has 1 observations and 9 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.00 seconds

MPRINT(CTW2WHOLE\_PCT): data preSet;

MPRINT(CTW2WHOLE\_PCT): set preSet \_xsum;

MPRINT(CTW2WHOLE\_PCT): run;

NOTE: There were 9 observations read from the data set WORK.PRESET.

NOTE: There were 1 observations read from the data set WORK.\_XSUM.

NOTE: The data set WORK.PRESET has 10 observations and 9 variables.

NOTE: DATA statement used:

real time	0.01 seconds
cpu time	0.00 seconds

MPRINT(CTW2WHOLE\_PCT): proc transpose data=preSet out=inSetx;

MPRINT(CTW2WHOLE\_PCT): id ticker;

NOTE: There were 10 observations read from the data set WORK.PRESET.

NOTE: The data set WORK.INSETX has 8 observations and 11 variables.

NOTE: PROCEDURE TRANSPOSE used:

real time	0.01 seconds
cpu time	0.00 seconds

MPRINT(CTW2WHOLE\_PCT): data inSet;

MPRINT(CTW2WHOLE\_PCT): length \_type\_ \$15;

```

MPRINT(CTW2WHOLE_PCT): set insetX(rename=(name=id_));
MPRINT(CTW2WHOLE_PCT): if ( _id_ in ("LOWERBD","UPPERBD") ) then do;
MPRINT(CTW2WHOLE_PCT):   _type_ = _id_;
MPRINT(CTW2WHOLE_PCT):   _rhs_ = .;
MPRINT(CTW2WHOLE_PCT):   output;
MPRINT(CTW2WHOLE_PCT): end;
MPRINT(CTW2WHOLE_PCT): else if ( _id_ in ("STD") ) then do;
MPRINT(CTW2WHOLE_PCT):   _type_ = "MIN";
MPRINT(CTW2WHOLE_PCT):   _rhs_ = .;
MPRINT(CTW2WHOLE_PCT):   output;
MPRINT(CTW2WHOLE_PCT): end;
MPRINT(CTW2WHOLE_PCT): else if ( _id_ in ("GE" );
MPRINT(CTW2WHOLE_PCT):   _type_ = "GE";
MPRINT(CTW2WHOLE_PCT):   _rhs_ = 0;
MPRINT(CTW2WHOLE_PCT):   output;
MPRINT(CTW2WHOLE_PCT): end;
MPRINT(CTW2WHOLE_PCT): else if ( _id_ in ("INTEGER") ) then do;
MPRINT(CTW2WHOLE_PCT):   _type_ = _id_;
MPRINT(CTW2WHOLE_PCT):   _rhs_ = .;
MPRINT(CTW2WHOLE_PCT):   output;
MPRINT(CTW2WHOLE_PCT): end;
MPRINT(CTW2WHOLE_PCT): else if ( _id_ in ("EQ");
MPRINT(CTW2WHOLE_PCT):   _type_ = "EQ";
MPRINT(CTW2WHOLE_PCT):   _rhs_ = 100;
MPRINT(CTW2WHOLE_PCT):   output;
MPRINT(CTW2WHOLE_PCT): end;

```

NOTE: There were 8 observations read from the data set WORK.INSETX.

NOTE: The data set WORK.INSET has 6 observations and 13 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.01 seconds

```

MPRINT(CTW2WHOLE_PCT): proc lp data=inSet printlevel=-2 primalout=_lpout activeout=actout dualout=duout imaxit=100000 time=25
varselect=far ieppsilon=.001 canselect=1ifo maxitl=200;
MPRINT(CTW2WHOLE_PCT): run;

```

NOTE: The solution in the PRIMALOUT= data set is the optimal integer solution.

NOTE: The solution in the DUALOUT= data set is the optimal integer solution.

NOTE: There were 6 observations read from the data set WORK.INSET.

NOTE: The data set WORK.\_LPOUT has 13 observations and 10 variables.

NOTE: The data set WORK.ACTOUT has 1 observations and 13 variables.

NOTE: The data set WORK.DUOUT has 3 observations and 9 variables.

NOTE: PROCEDURE LP used:

real time	0.18 seconds
cpu time	0.02 seconds

```

MPRINT(CTW2WHOLE_PCT): proc sql noprint;
MPRINT(CTW2WHOLE_PCT): create table pf.mdl_ctw as select a.cticker length=8,b._VALUE_/100 as wgt from pf.ctw a,
_lpout b where a.cticker=b._VAR_ and b._TYPE_ in ("FIXED","INTEGER") and b._VALUE_ ne 0 order by a.cticker,a.ticker;
NOTE: Table PF.MDL_CTW created, with 7 rows and 3 columns.

```

```
MPRINT(OPTO_PF): ;
```

NOTE: PROCEDURE SQL used:

real time	0.04 seconds
cpu time	0.01 seconds

```
MPRINT(CTWRET): data _r7;
```

```
MPRINT(CTWRET): set pf.mdl_ctw(where=(wgt ne 0));
MPRINT(CTWRET): run;
```

NOTE: There were 7 observations read from the data set PF.MDL\_CTW.

WHERE wgt not = 0;

NOTE: The data set WORK\_R7 has 7 observations and 3 variables.

NOTE: DATA statement used:

```
real time      0.01 seconds
cpu time       0.00 seconds
```

```
MPRINT(VARENUM): proc sql;
MPRINT(VARENUM): create table _r2 as select distinct ticker as ticker from _r7 order by ticker;
NOTE: Table WORK_R2 created, with 7 rows and 1 columns.
```

NOTE: PROCEDURE SQL used:

```
real time      0.02 seconds
cpu time       0.01 seconds
```

```
MPRINT(VARENUM): data _r2;
MPRINT(VARENUM): set _r2;
MPRINT(VARENUM): format tickid $8.;
MPRINT(VARENUM): tickid = "W" || left(trim(put(_n_,8)));
MPRINT(VARENUM): run;
```

NOTE: There were 7 observations read from the data set WORK\_R2.

NOTE: The data set WORK\_R2 has 7 observations and 2 variables.

NOTE: DATA statement used:

```
real time      0.01 seconds
cpu time       0.01 seconds
```

```
MPRINT(CTWRET): ;
MPRINT(DS2NA): proc sql noprint;
MPRINT(DS2NA): select count(distinct ticker) into :_ct0 from _r2 where ticker ne '' ;
NOTE: PROCEDURE SQL used:
```

```
real time      0.02 seconds
cpu time       0.00 seconds
```

```
MPRINT(DS2NA): proc sql noprint;
MPRINT(DS2NA): select distinct ticker into :_ct1 - :_ct7 from _r2 where ticker ne '' order by ticker;
MPRINT(CTWRET): ;
```

NOTE: PROCEDURE SQL used:

```
real time      0.01 seconds
cpu time       0.01 seconds
```

```
MPRINT(V_REPLAC): proc sort data=_r7 out=_a1;
MPRINT(V_REPLAC): by ticker;
```

NOTE: There were 7 observations read from the data set WORK\_R7.

NOTE: The data set WORK\_A1 has 7 observations and 3 variables.

NOTE: PROCEDURE SORT used:

```
real time      0.01 seconds
cpu time       0.00 seconds
```

```

MPRINT(V_REPLAC):  proc sort data=_r2(keep=ticker tickid) out=_a2;
MPRINT(V_REPLAC):    by ticker;
NOTE: There were 7 observations read from the data set WORK._R2.
NOTE: The data set WORK._A2 has 7 observations and 2 variables.
NOTE: PROCEDURE SORT used:
      real time      0.01 seconds
      cpu time       0.00 seconds

MPRINT(V_REPLAC):  data _r3 (drop=ticker rename=(__x=ticker));
MPRINT(V_REPLAC):    merge _a1(in=ina) _a2(rename=(tickid = __x ticker=ticker));
MPRINT(V_REPLAC):    by ticker;
MPRINT(V_REPLAC):    if ina;
MPRINT(V_REPLAC):  run;

NOTE: There were 7 observations read from the data set WORK._A1.
NOTE: There were 7 observations read from the data set WORK._A2.
NOTE: The data set WORK._R3 has 7 observations and 3 variables.
NOTE: DATA statement used:
      real time      0.02 seconds
      cpu time       0.01 seconds

MPRINT(TRASH):  proc datasets nolist lib=work;
MPRINT(TRASH):    delete _a1 _a2;
MPRINT(TRASH):  run;

NOTE: Deleting WORK._A1 (memptype=DATA).
NOTE: Deleting WORK._A2 (memptype=DATA).
MPRINT(V_REPLAC):  ;
MPRINT(CTWRET):  ;

NOTE: PROCEDURE DATASETS used:
      real time      0.03 seconds
      cpu time       0.01 seconds

MPRINT(L2WTRAN):  proc sort data=_r3;
MPRINT(L2WTRAN):    by cticker;
MPRINT(L2WTRAN):  run;

NOTE: There were 7 observations read from the data set WORK._R3.
NOTE: The data set WORK._R3 has 7 observations and 3 variables.
NOTE: PROCEDURE SORT used:
      real time      0.01 seconds
      cpu time       0.00 seconds

MPRINT(L2WTRAN):  proc transpose data=_r3(keep=wgt ticker cticker) out=_r3(keep=cticker _numeric_);
MPRINT(L2WTRAN):    var wgt;
MPRINT(L2WTRAN):    id ticker;
MPRINT(L2WTRAN):    by cticker;
MPRINT(L2WTRAN):  run;

NOTE: There were 7 observations read from the data set WORK._R3.
NOTE: The data set WORK._R3 has 1 observations and 8 variables.
NOTE: PROCEDURE TRANSPOSE used:

```

real time 0.02 seconds  
cpu time 0.00 seconds

```
MPRINT(CTWRET): ;
MPRINT(DSNONULL): data _r3;
MPRINT(DSNONULL): set _r3;
MPRINT(DSNONULL): array _x _numeric_;
MPRINT(DSNONULL): do over _x;
MPRINT(DSNONULL): if _x = . then _x = 0;
MPRINT(DSNONULL): end;
MPRINT(DSNONULL): run;
```

NOTE: There were 1 observations read from the data set WORK.\_R3.

NOTE: The data set WORK.\_R3 has 1 observations and 8 variables.

NOTE: DATA statement used:

real time 0.01 seconds  
cpu time 0.01 seconds

```
MPRINT(CTWRET): ;
MPRINT(CLEANRET): proc sql;
MPRINT(CLEANRET): create table _rc2 as select distinct ticker from _r2;
NOTE: Table WORK._RC2 created, with 7 rows and 1 columns.
```

NOTE: PROCEDURE SQL used:

real time 0.01 seconds  
cpu time 0.00 seconds

```
MPRINT(CLEANRET): data _rc2;
MPRINT(CLEANRET): set _rc2 end=eof;
MPRINT(CLEANRET): if _n_ eq 1 then call symput("_CRA", ticker);
MPRINT(CLEANRET): if eof then call symput("_CR2", ticker);
MPRINT(CLEANRET): return = 0;
MPRINT(CLEANRET): run;
```

NOTE: There were 7 observations read from the data set WORK.\_RC2.

NOTE: The data set WORK.\_RC2 has 7 observations and 2 variables.

NOTE: DATA statement used:

real time 0.01 seconds  
cpu time 0.00 seconds

```
MPRINT(L2WTRAN): proc transpose data=_rc2(keep=return ticker ) out=_rc2(keep= _numeric_);
MPRINT(L2WTRAN): var return;
MPRINT(L2WTRAN): id ticker;
MPRINT(L2WTRAN): ;
MPRINT(L2WTRAN): run;
```

NOTE: There were 7 observations read from the data set WORK.\_RC2.

NOTE: The data set WORK.\_RC2 has 1 observations and 7 variables.

NOTE: PROCEDURE TRANSPOSE used:

real time 0.01 seconds  
cpu time 0.01 seconds

```
MPRINT(CLEANRET): ;
```

```

MPRINT(CLEANRET): data _r5(keep=date CPO -- _GIC_ );
MPRINT(CLEANRET): merge _rc2 pf.mdl_dtt;
MPRINT(CLEANRET): output;
MPRINT(CLEANRET): run;

```

NOTE: There were 1 observations read from the data set WORK.\_RC2.  
 NOTE: There were 36 observations read from the data set PF.MDL\_DTT.  
 NOTE: The data set WORK.\_R5 has 36 observations and 8 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.01 seconds

```

MPRINT(TRASH): proc datasets nolist lib=work;
MPRINT(TRASH): delete _rc2;
MPRINT(TRASH): run;

```

NOTE: Deleting WORK.\_RC2 (memtype=DATA).

```

MPRINT(CLEANRET): ;
MPRINT(CTWRET): ;

```

NOTE: PROCEDURE DATASETS used:

real time	0.02 seconds
cpu time	0.00 seconds

```

MPRINT(CTWRET): data _r6;
MPRINT(CTWRET): set _r5(rename=( CPO=_R1 PCNTX=_R2 FLPSX=_R3 FMAGX=_R4 POSFX=_R5 FUSEX=_R6 _GIC=_R7 ));
MPRINT(CTWRET): run;

```

NOTE: There were 36 observations read from the data set WORK.\_R5.

NOTE: The data set WORK.\_R6 has 36 observations and 8 variables.

NOTE: DATA statement used:

real time	0.02 seconds
cpu time	0.01 seconds

```

MPRINT(CTWRET): data _r7(keep=cticker date return);
MPRINT(CTWRET): set _r3 nobs=_nobs;
MPRINT(CTWRET): array _w[7] _w1 - _w7;
MPRINT(CTWRET): array _nw[7];
MPRINT(CTWRET): retain _nw1 - _nw7;
MPRINT(CTWRET): retain _w1 - _w7;
MPRINT(CTWRET): do _i = 1 to 7;
MPRINT(CTWRET): _nw[_i] = _w[_i];
MPRINT(CTWRET): end;
MPRINT(CTWRET): _zportf + 1;
MPRINT(CTWRET): if _nobs > 50 and 10*int(_zportf/10) = _zportf then put "portfolio " _zportf " / " _nobs;
MPRINT(CTWRET): do _rno = 1 to _robs;
MPRINT(CTWRET): set _r6 nobs=_robs point=_rno;
MPRINT(CTWRET): array _r[7] _r1 - _r7;
MPRINT(CTWRET): _sum = 0;
MPRINT(CTWRET): return = 0;
MPRINT(CTWRET): do _i = 1 to 7;
MPRINT(CTWRET): if _nw[_i] ne 0 then do;
MPRINT(CTWRET): return = return + _nw[_i] * _r[_i];
MPRINT(CTWRET): end;
MPRINT(CTWRET): end;

```

```

MPRINT(CTWRET):  output _r7;
MPRINT(CTWRET):  ;
MPRINT(CTWRET):  end;
MPRINT(CTWRET):  ;
MPRINT(CTWRET):  run;

```

NOTE: There were 1 observations read from the data set WORK\_R3.

NOTE: The data set WORK\_R7 has 36 observations and 3 variables.

NOTE: DATA statement used:

```

      real time      0.02 seconds
      cpu time       0.02 seconds

```

```

MPRINT(CTWRET):  proc sort data=_r7;
MPRINT(CTWRET):  by date cticker;

```

NOTE: There were 36 observations read from the data set WORK\_R7.

NOTE: The data set WORK\_R7 has 36 observations and 3 variables.

NOTE: PROCEDURE SORT used:

```

      real time      0.01 seconds
      cpu time       0.01 seconds

```

```

MPRINT(CTWRET):  proc transpose data=_r7 out=_dtc(keep = _numeric_);
MPRINT(CTWRET):  var return;
MPRINT(CTWRET):  id cticker;
MPRINT(CTWRET):  by date;
MPRINT(CTWRET):  run;

```

NOTE: There were 36 observations read from the data set WORK\_R7.

NOTE: The data set WORK\_DTT has 36 observations and 2 variables.

NOTE: PROCEDURE TRANSPOSE used:

```

      real time      0.02 seconds
      cpu time       0.02 seconds

```

```

MPRINT(TERR_CTW): ;
MPRINT(W2LTRAN): proc transpose data=_dtc out=_dtr(keep = date ticker coll rename=(coll=return)) name=ticker;
MPRINT(W2LTRAN): by date;
MPRINT(W2LTRAN): run;

```

NOTE: There were 36 observations read from the data set WORK\_DTT.

NOTE: The data set WORK\_DTR has 36 observations and 3 variables.

NOTE: PROCEDURE TRANSPOSE used:

```

      real time      0.02 seconds
      cpu time       0.01 seconds

```

```

MPRINT(W2LTRAN):  data _dtr;
MPRINT(W2LTRAN):  length ticker $8;
MPRINT(W2LTRAN):  set _dtr(where=(return ne .));
MPRINT(W2LTRAN):  run;

```

NOTE: There were 36 observations read from the data set WORK\_DTR.

WHERE return not = .;

NOTE: The data set WORK\_DTR has 36 observations and 3 variables.

NOTE: DATA statement used:

```

      real time      0.01 seconds

```

cpu time 0.02 seconds

```

MPRINT(DTT2DTR); ;
MPRINT(TERR_CTW); ;
MPRINT(TERR_CTW); proc sql noprint;
MPRINT(TERR_CTW); create table pf.mdl_terr as select ticker, std(return_BENCH)*sqrt(12) as trackerr from _dtr a, pf.mdl_dtt b
where a.date=b.date group by ticker order by ticker;
NOTE: Table PF.MDL_TERR created, with 1 rows and 2 columns.

```

```

MPRINT(OPTO_PF); ;
Optimization succeeded
MPRINT(DBEXEC); ;
NOTE: PROCEDURE SQL used:
      real time 0.03 seconds
      cpu time 0.02 seconds

```

```

MPRINT(DBEXEC); proc sql noerrorstop;
MPRINT(DBEXEC); connect to sybase as pod( server=SYBCAUCHY database=pod user=wateradm pass=wateradm );
MPRINT(DBEXEC); execute (pop2q_setstatus 'fpp/PRODUCTION/200203', 'fpp05003/2/10', 'done') by pod;
MPRINT(SETSTATUS); ;
MPRINT(OPTO_PF); ;
11789
NOTE: PROCEDURE SQL used:
      real time 0.14 seconds
      cpu time 0.08 seconds

```

```

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414
NOTE: The SAS System used:
      real time 23.82 seconds
      cpu time 7.89 seconds

```